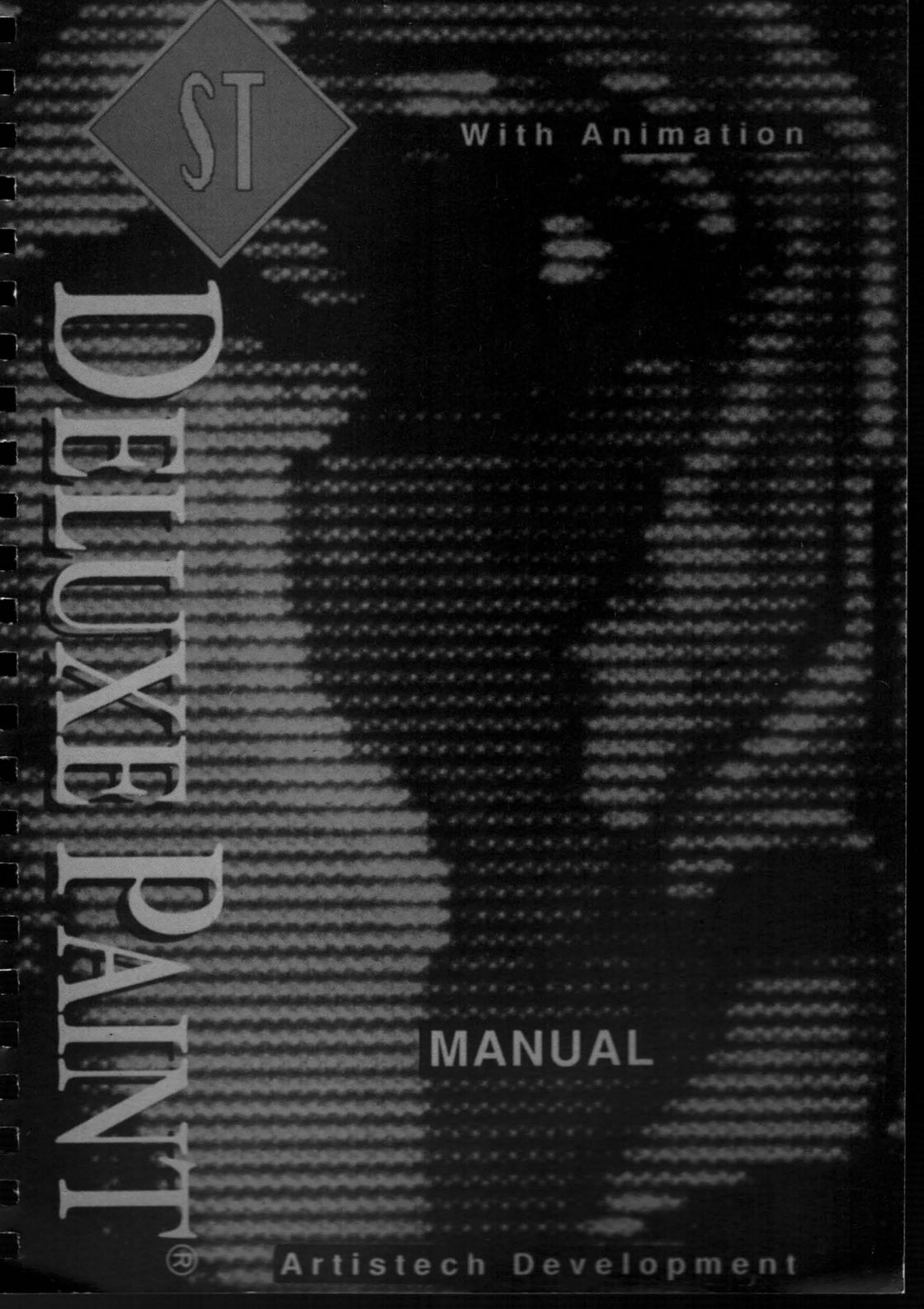
ST
With Animation
DELUXE PAINT®
MANUAL
Artistech Development

DeluxePaint

Atari ST/STE

Left to right: Anthony Pabon, Troy D. Gillette, Stephen White

Stephen White

Unlike most children, Stephen White knew at an early age what career he wanted. Stephen wanted to be a science fiction/fantasy author.

Then he discovered computers.

In 1982, a friend invited Stephen to come see his new ATARI 800 computer, and within the span of a few hours, all of his previous career plans had collapsed. Stephen purchased an ATARI 400 and a BASIC language cartridge and began what was to become an obsession.

In college, Stephen took few computer courses, but instead delved into electronics, believing that to truly understand computers, you must know how they work on the inside. Electronics fascinated Stephen, and he later graduated from college with a degree in Computer Electronics Technology and a certificate in Communication Electronics Technology.

In 1988, Stephen became frustrated at the lack of power and quality of the graphic editors available for the Atari ST. He was forced by necessity to create a simple graphic utility which allowed him to perform graphic editing tasks not available on any other ST software. The enthusiastic reaction of people who noticed Stephen using his utility was so great that he began to think about creating the ultimate graphic editor. An editor that couldn't just be good, it had to be the best!

Anthony Pabon

Anthony Pabon became interested in computers while in the sixth grade, when his father, a college professor, often abandoned him in the computer lab. It wasn't long before he got his first home computer – an ATARI 400 with a program recorder.

In college, Anthony found a new love: electronics. He immersed himself into discreet components, oscilloscopes, function generators, power supplies, etc., and putting computers aside, went to work for the XEROX Corporation as an electronics technician.

The release of Atari's latest generation of computers, the Atari ST, rekindled Anthony's interest in software programming. Almost the moment the ST reached the market, Anthony started developing a music/sound editing program and was soon writing sound and music routines for various games.

A few months after his friend, Stephen White, began developing DeluxePaint ST, Anthony decided to quit XEROX, take a part-time job for a large computer store and join Stephen, applying his talents to producing printing routines, methods, algorithms, colors and patterns that would be needed by DeluxePaint ST.

In 1989 he gave up his part-time job to become a full-time partner with Stephen developing software under their new company name: ArtisTech Development.

Troy Gillette

Troy D. Gillette, having been born with an odd fascination for buttons and switches, discovered in 1979 an ideal outlet for his infatuation. Given access to computers for the first time in his life, he became a 'digital junkie'. In 1982, he purchased his first computer, an Atari 800. By this time he had lost all touch with reality. Computers were the only thing that mattered.

After working briefly for a Sacramento computer store teaching BASIC programming, Troy moved on to a job at one of a chain of California bookstores. This was an ideal job. Not only did it satisfy his passion for Sci-Fi and fantasy novels, but it gave him almost unlimited access to the latest computer books, which he gladly devoured.

During the next few years, Troy spent most of his time at the bookstore and in college where he was pursuing a degree in computer science.

In 1988, Troy was asked by Stephen and Anthony if he would like to join them, and having agreed, soon became involved in the DeluxePaint ST project, supplying code such as the loading and saving routines, and the very fast, fill algorithm. It had become obvious, after innumerable people asking, that the editor was going to have to animate. Troy spent several weeks implementing and debugging animation routines and added several other odds and ends.

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Chapter 1

Introduction

Notes

Chapter 1
Introduction

Until now you could only look enviously at Commodore Amiga owners as they flipped, stretched, airbrushed and animated their pictures using DeluxePaint, but with the release of ***DeluxePaint ST*** *you can finally unleash the graphics potential of your Atari ST to create works of art with an ease and precision you only dreamed of. If you are a newcomer to computer graphics you will find* ***DeluxePaint ST*** *provides an excellent introduction to this exciting field, while professional users will find its broad range of tools and features provides them with the power and flexibility they need. In this manual, you will learn how to use* ***DeluxePaint ST*** *to create custom brushes, mix your own colours and produce stunning animations. Let those pixels fly!*

This manual has been organised so that you can use it in the manner best suited to you. For example, if you are already familiar with computer graphics, you may just want to jump straight in and refer to Chapter 8: Reference, to answer any questions you have along the way, while beginners will probably prefer to work through the tutorials in Chapter 5. However you decide to use this manual, remember that the more you read, the more you will get out of **DeluxePaint ST**.

Traditional methods vs. computer graphics

DeluxePaint ST is not a substitute for traditional media, though it can be used to produce prototypes of paintings and illustrations in far less time than it would take using paints or drafting tools. But computer graphics are much more than this; they are a medium in their own right, and with them you can do things that would be difficult or impossible using traditional methods. As appreciation and awareness of computer graphics grows, paint packages are becoming more sophisticated and the art produced by them is being taken more seriously. So what are the advantages of computer graphics?

Well, as we have already mentioned, you can do things that would be impossible to do with traditional methods. For example, with **DeluxePaint ST** you can hold several drawings in memory at the same time and copy parts of drawings onto other drawings.

You can create a tree by painting with a copy of a single leaf, and a whole forest by painting copies of the tree.

You can change swathes of colour used in a drawing to create a night scene from a summers day, or change fair hair to brown.

You can stretch, rotate and flip parts or all of a drawing, and shrink or enlarge graphics to fit.

You can save as many copies of a picture as you like, and print them out at any time. You can also save elements of a drawing for use later on. 'Clip art' stored in this way can be incorporated into new drawings any time they are required, so you could, for example, paste a picture of a car drawn earlier onto a street scene you are working on.

And, last but not least, with the animation feature of **DeluxePaint ST** you can make your pictures *move.*

About this manual

If you are new to computer graphics, Chapter 2: Getting started is probably the best place to begin. Here you will learn how to start **DeluxePaint ST**, how to load a picture and how to quit the program. Chapter 3: A guided tour leads on from chapter 2 and introduces the basic principles behind **DeluxePaint ST** with some examples to help you get the feel of things.

Chapter 4: The elements describes the basic painting elements available in **DeluxePaint ST** and how they interrelate. You will learn how to mix paint, create custom brushes and how to mix text and graphics. Once you have mastered these elements you can move on to some of the more exotic features of DeluxePaint.

Whether you are a beginner or an experienced computer artist, you will find the tutorials in Chapter 5: Painting Tutorials a useful introduction to some of the more advanced features of **DeluxePaint ST**. This is where you will find out about such things as stencils (or *friskets* to those airbrush artists amongst you), other ways of mixing and blending colours and animation effects using colour cycling. Working through these tutorials is well worth the effort once you have got the hang of **DeluxePaint ST**.

Expert computer graphic artists may decide to skip the rest of the manual and just jump straight to Chapter 8: Reference. This chapter contains a description of all the tools and features of **DeluxePaint ST** listed in order of their appearance in the toolbox.

At the end of the manual there are three appendices covering memory management, a complete list of keyboard equivalents for **DeluxePaint ST** commands and a description of how to use the **DeluxePaint ST** Print program which allows you to print your work on a wide range of different printers.

Finally, on the Reference card you will find information on two other utilities that come with **DeluxePaint ST**: the Player application which you can use to play animations and display pages of graphics without running **DeluxePaint ST**, and the Convert application which allows you to convert **DeluxePaint ST** pictures and animations to and from the formats used by the IBM PC and Commodore Amiga versions of DeluxePaint.

Notes

Chapter 2

Getting Started

Notes

Chapter 2
Getting started

This chapter describes the contents of your ***DeluxePaint ST*** *package and what computer software and hardware you need to use it. It also explains how to start DeluxePaint, how to load a picture and (just as important!) how to quit* ***DeluxePaint ST*** *.*

Software

DeluxePaint ST is supplied on three disks:

The Program disk contains the **DeluxePaint ST** program, the fonts, the print program and the printer drivers.

The Art disk contains a selection of images and brushes which you can use in your work.

The Animation disk contains some animation examples to give you some idea of what you can do with **DeluxePaint ST**'s animation features. Also included on this disk is the Viewer utility which you can use to view your animations outside of DeluxePaint. You will find a description of the Viewer in Appendix E of the manual.

The ReadMe file

Before you do anything else, read the ReadMe file on your Animation disk. This file may contain information about **DeluxePaint ST** that was not available before the manual went to press. To read the ReadMe file:

- Double-click on the ReadMe icon

Choose Show from the dialog box that follows (you can also choose Print if you want a permanent copy of the file).

If there is more than one page in the ReadMe file, click the left mouse button to see each page in turn. Click the right mouse button to finish.

Hardware

To use **DeluxePaint ST** you will need an Atari ST, Mega ST or STE computer, a TV or monitor, and some blank disks to save your work on. If you intend to print the pictures you create, you will also need a black and white or colour printer. See Appendix D for a list of printers which are compatible with **DeluxePaint ST**.

Installing DeluxePaint ST

You probably already know how to format disks, copy disks, delete files and move files from the desktop, (if you are not familiar with this then please refer to your Atari ST handbook before going any further). Later on you will learn how to carry out most of the disk operations you will need from within **DeluxePaint ST**.

Before using **DeluxePaint ST** you should take a copy of the disks and put the original disks away to reduce the chance of anything happening to them.

Hard disk owners

If you have a hard disk attached to your ST you can install DeluxePaint onto it as follows:

- Create a new folder named DELUXE on your hard disk. (To do this, open the hard disk window by clicking on its icon, then select New Folder from the File menu and type DELUXE in the dialog box. Finally, click OK and the new folder will appear in the disk window.)
- Insert the **DeluxePaint ST** program disk into a disk drive.
- Double-click on the disk icon to view the contents of the disk.

- Hold the shift key down and click each of the files in turn until they are all selected (use the scroll bars on the edges of the window to view any files which you can't see).
- Drag the selected icons to the DELUXE folder on the hard disk. Release the mouse button to copy the files.
- Remove the Program disk and insert the Art disk. Double-click the disk icon to view the contents of the disk. Select all of the files in the same way as you did with the Program disk and drag them to the DELUXE folder to copy them.
- Replace the Art disk with the Animation disk and drag all the icons to the DELUXE folder in the same way as above.

You now have copies of the **DeluxePaint ST** program and the Art and Animation folders on your hard disk.

Starting DeluxePaint ST

To start **DeluxePaint ST**:

- Turn on your computer and monitor and insert the Program disk (unless you have a hard disk).
- Double-click the disk icon to open the disk window
- Double-click the **DeluxePaint ST** program icon (DPAINT.TOS) to start the application.

If this is your first time using **DeluxePaint ST** we recommend that you read the following chapter, where you will learn how to use many of **DeluxePaint ST**'s tools and techniques.

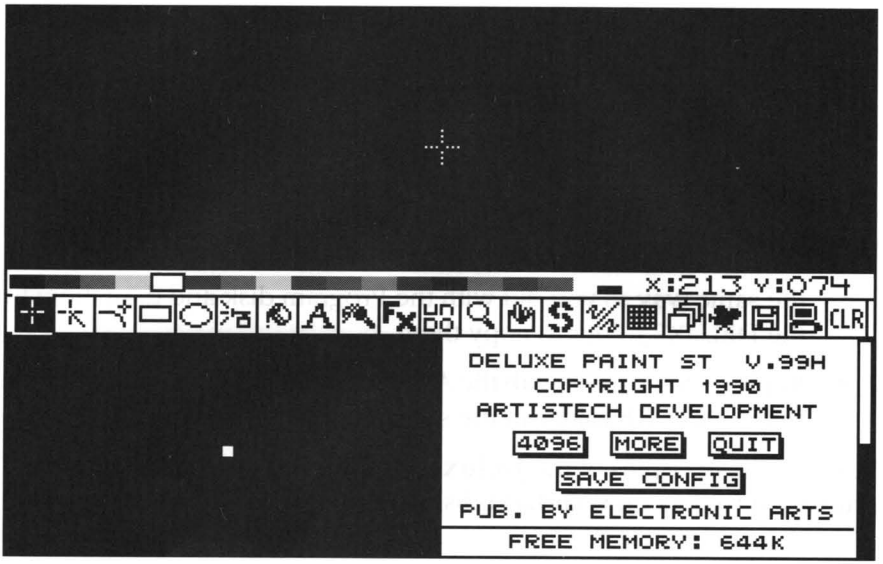


FIG 2.1: *The DeluxePaint ST screen*

Loading a picture

Before we leave this chapter, let's see how to load one of the sample pictures on the disk. The picture we will load is called **Gorilla**.

- Insert the Art disk in drive A:

All operations involving the disk drive are accessed from the disk icon in the toolbox. The disk icon is the third icon from the right.

- Click on the disk icon (move the pointer over the icon and press the left mouse button). This displays the disk sub-menu.
- Click on LOAD. This displays the load picture requester:

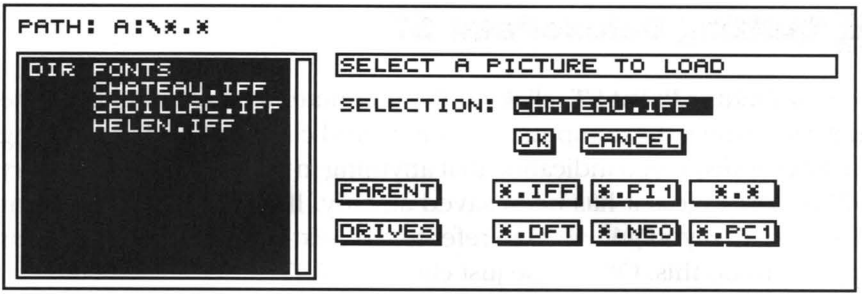


Fig 2.2: *The load picture requester*

The contents of the disk are listed in the window at the left of the load picture requester. If there are too many pictures to be displayed at once, you can scroll through the list by dragging the scroll box up and down. Directories (folders) are indicated by the word DIR placed before the directory name.

The picture that we are going to load is in the PICS directory:

- Double-click on DIR PICS to display the list of pictures in the PICS directory.
- Click on the file named Gorilla.

Notice that the filename appears in the edit field labelled SELECTION:. You can type a filename directly into the edit field, but it is usually easier to click directly on the filename.

- Click OK to load the picture. (You can also load a picture by simply double-clicking on its filename)

The disk drive spins and the pointer changes to an icon of a computer with a "think bubble" to indicate that it is loading the picture. The picture will appear a few seconds later. Press the spacebar to see the whole picture.

Quitting DeluxePaint ST

To exit **DeluxePaint ST**, click on the computer icon (second from the right) to display the computer sub-menu and click on QUIT. A warning message is displayed indicating that anything in the computer's memory will be lost unless it has been saved already. If you wish to save your changes, then you will need to refer to the next chapter for instructions on how to do this. Otherwise just click on QUIT.

Technical Support

If you have questions about **DeluxePaint ST** and you can't find the answers in this manual, our Technical Support department can help. If your question is not urgent, please write to us at the following address:

Electronic Arts Technical Support
11-49 Station Road
Langley
Berks
SL3 8YN

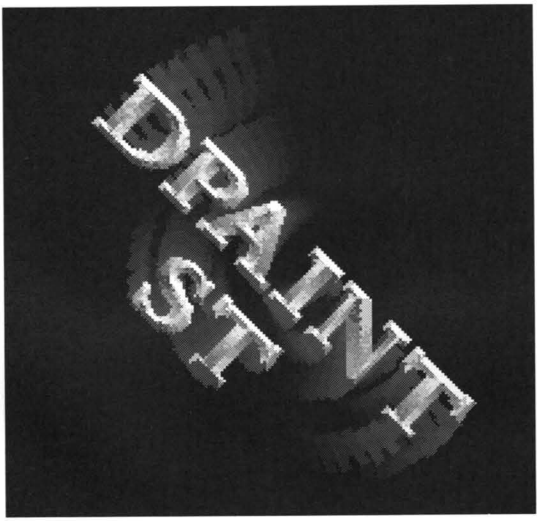
Electronic Arts US
PO Box 7578
San Mateo
CA 94403 – 7578

Please be sure to include the following information with any correspondence:

- Which version of **DeluxePaint ST** you are using (you'll find this information in the computer sub-menu - click the computer icon to display it).
- Which model Atari you are using (520, 1024, ST, STE)
- How much extra RAM you have installed in your ST
- Additional system configuration notes (for example, number of disk drives, type and make of monitor, printer, etc.)

If you would like to speak to someone directly, call us on (0753) 49442 Monday to Friday between 9 am and 6 pm. Again, please try to have all the information above handy when you call. This information will help us to help you more quickly.

Chapter 3



A Guided Tour

Notes

Chapter 3
A guided tour

This chapter provides an introduction to ***DeluxePaint ST*** *by describing some of the basic features in simple step-by-step exercises. Whether you are new to computer graphics or have been using other paint programs, you will find this chapter useful.*

DeluxePaint ST opens with the painting screen. It contains the Toolbox and Palette in the centre, the Zoom monitor at the bottom left, and an area where sub-menus and messages are displayed at the bottom right. The top half of the screen is taken up by the "Page" where your masterpiece will take shape.

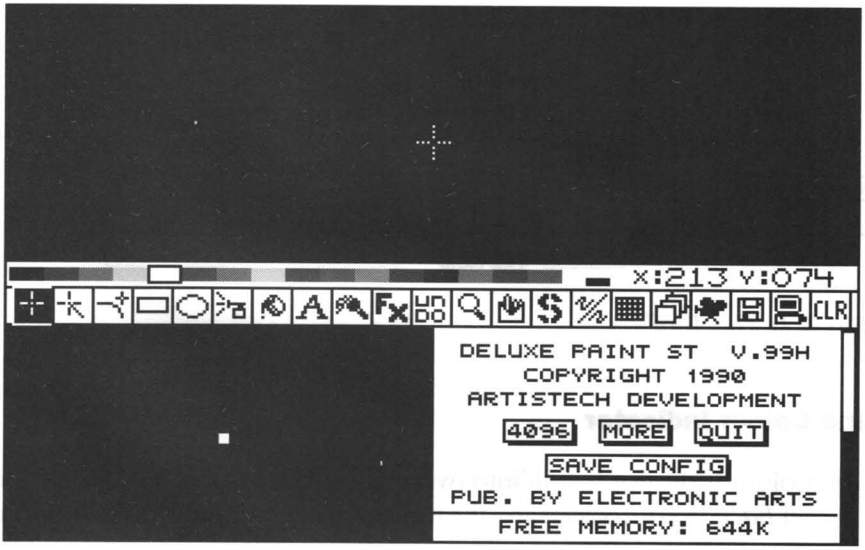


Fig 3.1: *The* ***DeluxePaint ST*** *screen*

The Zoom Monitor

At the bottom left of the screen is an area in which a magnified portion of the screen is displayed while you are painting on the page. As you

move the pointer over the Page, the Zoom Monitor scrolls automatically so that the pointer remains in the centre of the magnified area. You can edit your picture directly in the Zoom Monitor area when you need to work on fine details.

The Palette

Colours are selected from the Palette which contains the range of colours currently available. In Low Resolution mode (the mode used by **DeluxePaint ST**) the Atari ST can display up to 16 colours on the screen at the same time, chosen from a range of 512 colours (or 4096 if you are using an Atari STE). As you will see later, you can alter any of the colours in the Palette from the Palette sub-menu.

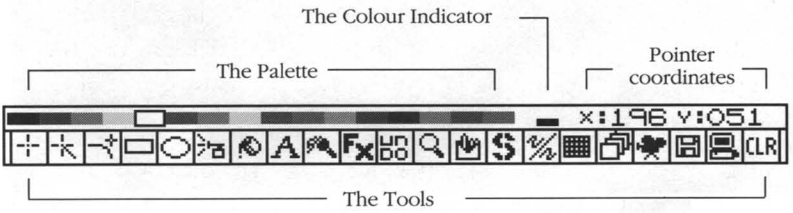


Fig 3.2: *The Toolbox*

The Colour Indicator

The Colour Indicator is split into two halves. The bottom half shows the current *background* colour and the top half shows the current *foreground* colour.

The background colour is the colour of the page and is set to the first colour in the Palette (black) when you start **DeluxePaint ST**. If you paint on the page with the background colour, it will appear to have no effect, as if you were putting black paint onto a black canvas. As you'll see in a moment, painting with the background colour is a way of erasing an image on the Page.

The foreground colour is the colour you are painting with. You can change the colour at any time by clicking one of the other shades in the Palette with the left mouse button.

Try this now:

- Move the pointer to one of the colours in the Palette and click with the left mouse button.

The top half of the Colour Indicator changes to show the new foreground colour. Click the other colours to see how the Colour Indicator changes each time. You can do the same thing with the background colour, by clicking with the right mouse button.

- Move the pointer to one of the colours in the Palette and click using the right mouse button.

Notice that although the bottom half of the Colour Indicator changes to indicate the new background colour, the Page itself is still the old background colour. This is because **DeluxePaint ST** keeps the old colour as a "wash" over the new background colour until you clear the page. Try it now.

- Using the right mouse button, click the icon labelled CLR (the rightmost icon). This clears the screen and replaces the page colour with the new background colour you selected.

Note: Clicking CLR using the left mouse button clears the screen with the first colour in the palette regardless of what the background colour is set to.

Before going any further, let's try out one of the most important tools in the Toolbox, the UNDO tool. The UNDO tool, which is positioned in the centre of the Toolbox, is used to "undo" your last painting action.

- Click on the UNDO icon to bring back the old background colour.

UNDO reverses your last action provided there has been no intervening mouse click, so that if you were to click CLR twice for example, clicking UNDO would not reverse the clear command.

Painting with the mouse

Now that you have seen how to select colours from the Palette, it's time to create your first freehand drawing.

- Select a foreground and a background colour from the palette by clicking with the appropriate mouse buttons. Choose contrasting colours, yellow for the foreground and red for the background for example.
- Click CLR with the right mouse button to clear the screen to the new background colour.
- Click the Freehand Draw icon (the leftmost icon in the toolbox) using the left mouse button.
- Move the pointer over to the page (where it changes to a cross hair) and, while holding down the left mouse button, draw a figure on the screen. It doesn't need to be accurate - a squiggly line or a rough circle will do.
- Now press the right button and draw over your first figure.

Notice that drawing with the right button has the effect of erasing your drawing, although what you are actually doing is painting over it with the background colour. To sum up, when you are painting use the left mouse button for foreground colours and the right mouse button for background colours, just as you did when selecting colours from the palette.

Before we move on, let's find out how to scroll the page. The size of the page you are drawing on is set to the same size as the screen, so at the moment part of it is hidden underneath the toolbox. To scroll the page so that you can see this part, you can use the cursor keys or the scroll bar to the right of the toolbox.

- Draw something in the centre of the screen so that you can see it move when you scroll the page. With the pointer still positioned on the Page, press the up arrow key to scroll up the page or the down arrow to scroll down the page. Alternatively, move the pointer over the slider bar to the right of the toolbox and press and hold the left mouse button while dragging it up or down as required.

You can also scroll the view in the Zoom Monitor the same way:

- Move the pointer over the Zoom Monitor. A magnified view of the centre of the Page is displayed. Notice that this view is fixed, and no longer follows the movements of the mouse. Press the up, down, left and right arrow keys to scroll the view to another area of the screen.

You will find more about the Zoom Monitor in the next chapter.

Picking colours from the screen

Sometimes it can be difficult to see which colour in the palette matches the colour that you want on the page. This may happen, for example, when you are working in fine detail, or on a drawing using many shades of the same colour. A way round this problem is to select the colour directly from the screen where you are working:

- Click on the colour indicator. The word PICK is attached to the pointer. Point to a colour on the screen and click with the left mouse button to set the foreground colour, or the right mouse button to select the background colour. The colour indicator changes to indicate the new colour.

The Toolbox

The Toolbox contains icons representing the tools which are available in **DeluxePaint ST**. To select a tool, click on its icon with the left mouse button. Most of the tools in the Toolbox have sub-menus associated with them which contain the range of options available for that tool. To display the sub-menu of a tool when you select it, click on its icon using the right mouse button. We won't be looking at all the options in the sub-menus in this chapter, but just those which are needed to gain an understanding of how the tools work.

The Freehand Draw tool

So far you have been painting with a single pixel brush that is selected when you first load **DeluxePaint ST** (a pixel, short for a picture element, is the smallest dot you can see on the screen). **DeluxePaint ST** has 10 built-in brushes, all of which can be selected from the Freehand Draw sub-menu, which is the leftmost icon in the toolbox.

- Click the Freehand Draw icon using the right mouse button to display the freehand draw sub-menu.
- Click on one of the brush shapes arranged along the top of the sub-menu.

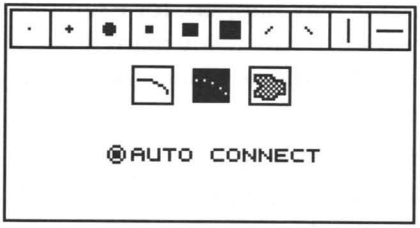


Fig 3.3: *The Freehand Draw sub-menu*

- Move the pointer to the Page and paint as before with your new brush.

There are three other icons in the Freehand Draw sub-menu which control the way the brush works while you paint. These are Continuous Freehand, Dotted Freehand and Freehand Shape.

Continuous Freehand

When you use the Continuous Freehand option, no breaks or gaps will occur however fast you draw. **DeluxePaint ST** does this by drawing a series of straight lines between each point as you draw. The faster you draw the greater will be the distance between each point, so smooth curves need to be drawn slowly and carefully. You can draw more quickly with a smaller brush.

Dotted Freehand

The Dotted Freehand option works by painting each point as you draw. This makes it much faster than the Continuous Freehand option and is useful for sketching out a drawing before using the other tools to refine it. Note that the faster you draw with the Dotted Freehand option, the bigger the gaps will be between each point.

Freehand Shape

This option is used to draw a filled shape on the screen and is therefore rather different than the other two options in the Freehand Draw sub-menu.

To create a filled shape:

- Click the Freehand Shape icon on the Freehand Draw sub-menu.
- Draw an outline of a shape on the screen using the left mouse button to use the foreground colour or the right mouse button to use the background colour. When you release the mouse button, the two ends of the outline are joined together and the shape is filled.

Remember to use the left mouse button to draw with the foreground colour and the right mouse button to draw with the background colour.

The Define Brush tool

So far you have only been using the built-in brush shapes, but with **DeluxePaint ST** you can create your own brushes simply by grabbing areas of the screen. This is done using the Brush Selector tool.

- Paint three different coloured blobs next to each other on the Page using the large round brush.
- Click on the Brush Selector icon and move the pointer onto the Page. Notice that a cross-hair that reaches to the edges of the screen has appeared.

- Move the pointer above and to the left of the coloured blobs. Now, while holding the left mouse button down, drag the pointer to the bottom right of the blobs until they are completely enclosed by the cross-hairs. Release the mouse button.

And that's it, you have created a new brush! Try painting with it to see how it looks.

When you create a brush, any parts of the screen you grabbed that were in the current background colour become transparent, so that it appears as though you only pick up foreground colours. This means that you can create brushes from intricate designs without picking up a rectangle of the surrounding colour. Background colours in a brush remain transparent even if you choose a new background colour.

Notice that the original image is unaffected when you create a brush this way. If you use the right mouse button to pick up a brush instead of the left one, the area you grab will be replaced with the current background colour. This is a way of moving images from one part of the screen to another.

There are a number of ways in which brushes can be modified, stretched and distorted that we will find out about later, but for now experiment a little creating new brushes and painting with them.

The Straight Line tool

The second icon from the left in the Toolbox is the Straight Line Tool. Let's try it:

- Select the single pixel brush.
- Click the Straight Line icon.
- Move the pointer to where you want the line to start and press and hold down the left mouse button. Now move the pointer to "rubber band" a line until it is the length and direction you want. Release the mouse button to fix the line.

Try using different brushes. The line is drawn using the current brush and colour. As with the other drawing tools, if you use the right mouse button instead of the left one, the line will be drawn in the current background colour. Drawing a line with a large brush can be slow; if you change your mind you can cancel drawing a line (or, in fact, any shape) by pressing the Esc key on the keyboard. Click UNDO (or press the Undo key) if the line has already been drawn.

The Curve tool

This is quite a sophisticated tool but it's not too difficult to use once you have got the hang of it. It works using a technique known as a Bezier Curve (named after a 19th century French mathematician). With it, you create a start point, two control points and an end point. By moving the control points you can adjust the shape of the curve until it is exactly the shape you want before drawing it. Let's try it.

- Click on the Curve icon.
- Move the pointer to where you want the curve to start from and click. Move the pointer to roughly where you want the curve to be about a third of the way along its length and click again. Click again at a position about a third of the way from the end of the curve. Finally, click where you want it to end and the curve will be drawn.

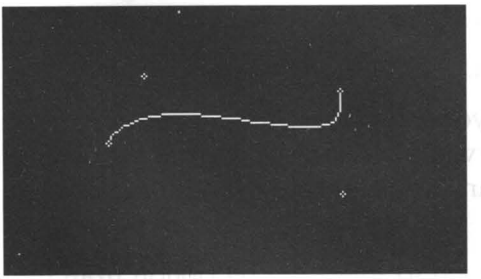


Fig 3.4: *Drawing a curve*

Notice that the start and end points and the two control points are all indicated by little crosses. To adjust any of the points, just select and drag it to a new position. Try adjusting one of the control points this way:

- Move the pointer near to one of the control points. Press and hold the left mouse button while moving the mouse to change the shape of the curve. Release the mouse button when you have got the shape you want.

You can adjust any point any number of times this way. Try adjusting the start and end points to see how this affects the curve.

When you are ready to draw the curve press the right mouse button. Once it is drawn, you can no longer alter the shape of the curve (but remember, you can click UNDO immediately after drawing the curve if you are not happy with it).

With a little practice you will be able to produce curves of any shape or size. Try joining a series of curves to make a single, flowing design. To draw a curve in the background colour, click the right mouse button to create the points, but note that you still use the left mouse button to adjust the points and click with the right mouse button to draw the curve.

The Rectangle tool

With this tool you can draw squares or rectangles either outlined or filled. When creating an outlined square, the Rectangle tool uses the current brush shape and colour to draw it. When drawing a filled square, the brush is ignored and a solid square is drawn in the current foreground or background colour. Let's try drawing an outlined square:

- Click on the Rectangle icon.
- Move the pointer to where you want the top left corner of the box. Press the mouse button and while holding it down drag the outline of the box to the size you want it. Release the mouse button to draw the box.

To draw a filled rectangle you need to select the fill option from the Rectangle sub-menu. To do this:

- Click the Rectangle icon using the right mouse button to display the Rectangle sub-menu.

- Click the Fill option (the centre icon that looks like a paint pot).
- Draw a box as before, by clicking the top left corner and dragging out the box to the size you want it.

Notice that there are a number of other options in the sub-menu. Along the top are the built-in brushes, conveniently displayed so you can select a new one without having to go back to the Freehand Draw sub-menu. All tools in which the in-built brush shapes can be used display them at the top of their sub-menus. The other options in the Rectangle sub-menu will be described later, but there is one more we will look at before moving on – the Keep Square option. When you choose this option, **DeluxePaint ST** keeps the proportions of the rectangle exactly square while you are drawing it.

- Click the Keep Square option in the Rectangle sub-menu (the second icon from the left). Now draw a rectangle and notice how the proportions are constrained to form a square as you enlarge and reduce it.

The Ellipse tool

The Ellipse tool is used to draw ellipses and works in much the same way as the rectangle tool.

- Click the Ellipse icon.
- Move the pointer to where you want the centre of the ellipse to be and, while holding down a mouse button, drag the outline of the ellipse to the size you want it.
- Release the mouse button to fix the ellipse.

Draw filled ellipses by clicking the Fill option in the Ellipse sub-menu like you did to draw a filled square. You can also constrain the Ellipse tool to draw accurately proportioned circles by choosing the Keep Circular option from the sub-menu.

The Airbrush tool

The Airbrush tool works just like a real airbrush with adjustable tips and nozzles. By using the airbrush with different brush sizes you can produce a range of effects ranging from a fine, single pixel spray to a coarse spray made with a custom brush. Later on we will see how to adjust the size and colour controls for the airbrush, but for now let's try it as it is.

- Click the airbrush icon and try painting with it using various brushes.

Notice that just like a real airbrush, the colour builds up if you hold the mouse button down while keeping the pointer in the same spot.

The Fill tool

Use this tool to fill any enclosed space with the current foreground or background colour. To try out the fill tool:

- Draw a shape using the Freehand tool making sure that there are no gaps in the outline.
- Click the Fill tool and move the pointer to a position inside the shape (notice that the pointer is now a paint can). Now click one of the mouse buttons to fill the shape.

Note that if there are any gaps in the boundary of the shape the colour will "leak" through and fill the surrounding area. If this happens, click UNDO or press the Undo key on the keyboard and check to see where the gap is.

The single pixel at the tip of the paint coming out of the can is the part that must be inside the shape to fill. With care you can fill even a single pixel by placing the point over it.

Saving your work

We'll skip the remaining tools in the toolbox until later, but before we move on, let's see how to save the pictures (or "files") you create. To do this we will save whatever you drew in the preceding sections.

- First make sure you have a disk with enough space to save your drawing on in drive A:
- Click on the Disk icon (the third icon from the right). This displays the disk sub-menu:

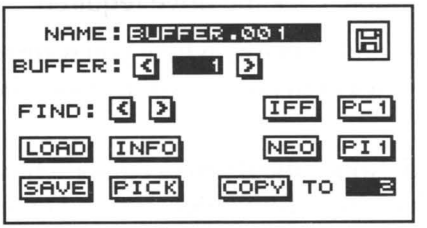


Fig 3.5: *The Disk sub-menu*

You can save your picture in a number of different formats. These are: IFF which is the default format used by **DeluxePaint ST**, NEO which is the format used and recognised by the Neochrome paint package and PC1 and PI1 which are formats used by the Degas Elite paint program. Unless you intend to load your picture into one of these programs, you should select IFF.

- Click on Save. This displays the Save Picture requester:

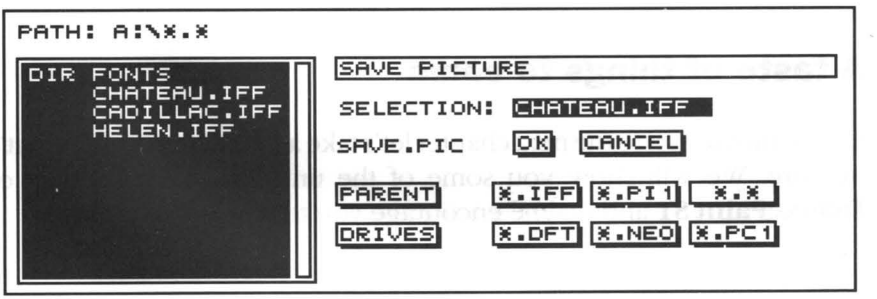


Fig 3.6: *The Save Picture requester*

The save picture requester is almost exactly the same as the load picture requester that we used in the last chapter. If there are any directories (folders) on your disk, they will be displayed with DIR next to them. Unless you are using a blank disk, you may want to save your picture in a different directory or drive from the one being displayed.

- To display the contents of a directory, double click on it.
- To go back to the parent directory click on the box labelled PARENT.
- To display the contents of another disk drive, click on DRIVES to display the drive names, and double-click the drive required.

When you are displaying the disk drive and directory where you want to save your picture you will need to give it a filename by typing it into the edit field labelled SELECTION:.

- Click the SELECTION: edit field. Notice the flashing cursor which has appeared. Press Esc to delete the existing filename and enter the new filename (up to eight characters). Don't forget to type the .IFF extension. Press Return to finish entering the filename.
- Finally, click on OK to save your picture.

DeluxePaint ST will remember the filename you typed in from now on, unless you type a new one, so when you next come to save your drawing you won't need to type it in again. (You should save the picture you are working on every 20 minutes or so, just in case you get a power cut or your cat pulls the plug out of the wall!).

A taste of things to come

Before moving on to the next chapter let's take a look ahead to see what's in store. We will show you some of the unique special features of **DeluxePaint ST** and maybe encourage you to read some more...

The Palette

In this example we will look at the effects you can produce by customising the colour palette. You will see how to customise the palette in the next chapter, but for now let's look at one of the effects which you can create.

- Insert the Art disk in a disk drive. Click the Disk icon to display the Disk sub-menu and click LOAD to display the Load Picture dialog box. Double click on the TUTORIAL directory in the directory window. Two more directories are displayed. Double-click on the PICS directory and load the file named Seascape.

Examine the picture carefully. Notice that the palette is different from the one we have been using so far. This is because the picture came with its own palette when it was loaded. The palette you have been using is the System palette which is the default palette whenever you start **DeluxePaint ST**. You can easily change the palette back to the System palette at any time. Try it now.

- Click on the Palette icon (to the right of the magnifying glass) with the right mouse button to display the Palette sub-menu and click on SYS.

Notice how the picture has changed. Changing the palette back to the System palette has caused the picture to change from night to day! If you want to restore the original palette, click ALL (undo all) on the palette sub-menu. (Note, however, that if you display a sub-menu of another tool in the mean time, the palette will be fixed and you won't then be able to revert to the original.)

The Stencil Tool

This example demonstrates a very powerful feature of **DeluxePaint ST** that allows you to paint over a picture without fear of accidentally messing it up.

- With the Seascape picture on your screen, click FIX (fix background) in the Stencil sub-menu (remember - click on a tool with the right mouse button to display its sub-menu).

What you have done is a simple yet powerful thing. You have fixed the picture so that no matter what you do, you cannot erase it. Try it.

- Click CLR. Nothing happens!

Try drawing over the picture.

- Select a thick brush and scrawl over the picture. Use different colours and brush sizes if you like. Now try drawing with the right mouse button.

See what happens? What you have just painted is cleared away to leave the original picture completely untouched! In the same way, when you click CLR everything that was drawn since the background was fixed is erased. You can unfix the background at any time simply by clicking FREE in the Stencil sub-menu.

You'll find out more about the Stencil feature in the next chapter, but meanwhile feel free to experiment.

Animation

Let's take a leap forward to look at one of the more advanced features of **DeluxePaint ST**. Animation may seem a little complicated - in fact it has a chapter all to itself - but follow the steps below carefully and you may just decide it's worth finding out more!

- Insert the Art disk in a drive and load the picture called CARBACK.IFF in the PICS/TUTORIAL directory. This is the background we are going to use.
- Click the Animation icon to display the Animation sub-menu and click the edit field labelled FRAMES:. Press Esc to clear the current setting and enter 20. Press Return when you have finished. You have now created 20 frames for animation, each of which contains a copy of the background picture.
- Click the Define Brush icon using the right mouse button to display the Define Brush sub-menu and click Load. Load the brush called EACAR.IFF in the BRUSHES\TUTORIAL directory. When the brush

has been loaded, you will have a picture of a car attached to your cursor.

- Click the Tweening icon (to the left of the Animation icon) to display the Tweening sub-menu.

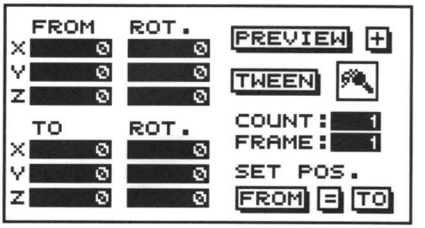


Fig 3.7: *The Tweening sub-menu*

- Click FROM (set position to start from), move the pointer to about half way up the screen in the middle of the road (this will be the starting position of the car) and click the left mouse button to set this position. Notice that the X and Y coordinates have been automatically entered in the FROM edit fields.
- Click TO and move the pointer onto the Page to where the car will end (at the bottom of the Page in the centre of the road – remember: use the slider bar or the up and down arrow keys to scroll the page). Click to fix this position.

Because the car starts some distance away at the beginning of the animation, it should also be set to appear smaller to make it more realistic. To do this:

- Click the FROM Z edit field, press Esc to clear the current value and enter 300.

You can now preview your animation by clicking PREVIEW. This will cause a wire-frame box the same size as your brush to perform the animation so that you can check to see if it looks OK. Finally, click TWEEN to tell the program to calculate the position and size of the car on each frame between the first and last.

Click on PLAY in the Animation sub-menu (or press * on the keypad) to see your animation in action. If you have carried out the steps described correctly, you should see the car come down the screen growing in size as it does so. We hope this example has tickled your taste buds. You'll find more about how to use this exciting feature in Chapter 7: Animation.

Chapter 4

The Elements

Notes

Chapter 4
The Elements

In this chapter we will examine the fundamental elements that make up ***DeluxePaint ST****. If you have used other graphics packages before, you may want to use this chapter to find out how* ***DeluxePaint ST*** *handles features which you have already come across in other programs. Like the rest of the manual, however, you can just dip in and read the bits that interest you if you don't want to read the whole chapter.*

We have classified the elements as follows:

Defining Brushes examines **DeluxePaint ST**'s Define Brush feature. This part looks at the various techniques available for creating and modifying brushes.

The Screen deals with all those techniques which affect the entire **DeluxePaint ST** screen, such as switching pages, magnifying and zooming, gridding, symmetry and screen resolutions.

The Palette looks at **DeluxePaint ST**'s colour mixing and colour cycling capabilities.

The Tools looks at advanced tool techniques and shows how to modify some of the standard tools to create just the right tool for the job.

The Brush Modes deals with the various ways you can apply paint to a page, or affect paint that is already there.

What you'll need

To complete the examples in this section you will need your working copies of the **DeluxePaint ST** Program and Art disks. If you want to save your work, you will also need a formatted disk with plenty of space for saving large files.

- If you already have the program running, we recommend that you restart to ensure that tools and option settings are set to their defaults.

1. Selecting Tools

As you have already seen, a tool is selected by clicking its icon with the left mouse button, or with the right mouse button to also display its sub-menu where the options for the tool are selected. This is the case for all of the drawing tools, which are the first eight icons in the toolbox. If you display a sub-menu you don't want, simply click the one you do want to replace it on the screen without changing anything. This also applies to dialog boxes selected within sub-menus.

2. Defining Brushes

As we saw in Chapter 3: A guided tour, **DeluxePaint ST** let's you select any area on the screen to use as a brush, so that you can, for example, keep a selection of images in another buffer which you can pick up and use as brushes when you need them. You can also save brushes, and then load them again when needed. Brushes and pictures are stored in the same way by **DeluxePaint ST**, allowing you to load, edit and save a brush as a picture.

Draw some freehand images on the page so that you can pick them up as brushes for this tutorial. Don't bother making them too intricate, simple shapes will do to illustrate the points that follow.

Creating a brush

To grab a brush from the Page:

- Click the Define Brush tool with the left mouse button.
- Hold down the left mouse button and drag the large crosshair to form a rectangle around the image you want to pick up. When you release the mouse button, an exact copy of the image is attached to the pointer.

You can now paint with your new brush or use it to create shapes as you would with any of the built-in brushes.

Note that as you saw in chapter 3, if you had picked the image up using the right mouse button, this would have removed the original image from the Page and replaced it with the current background colour. This is a good way of moving part of a picture to another position on the Page.

Another useful trick when drawing an image on your picture which you may want to move later, is to fix the background before creating the image. When you need to move it, you can then easily pick it up using the right mouse button and move it to the new position, uncovering the original background underneath it.

Creating an irregular shaped brush

So far you have been creating brushes by picking up rectangular areas of the screen, but this can be a problem if you need to pick up an irregular image which is surrounded by other graphics. The way to get round this is to cut the image out by drawing around it using the Carve option in the Define Brush sub-menu.

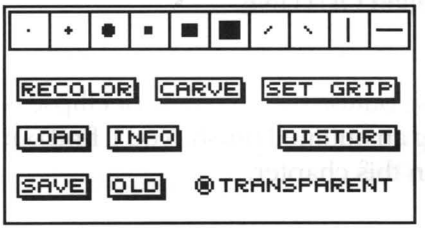


Fig 4.1: *The Define Brush sub-menu*

- Click CARVE in the Define Brush sub-menu. (Remember – to display the sub-menu belonging to a tool, click its icon using the right mouse button).
- Press and hold a mouse button while drawing a freehand shape around the image you want to pick up. When you release the mouse button, the two ends of the freehand shape will be joined together and the area surrounded by it will be picked up as a brush.

The mouse buttons work in the same way as they did when you created a rectangular brush, ie use the left mouse button to pick up a copy of the graphic, or the right mouse button to pick it up and remove it from the background.

Creating rectangular and elliptical brushes

You can create a filled rectangular brush by using the To Brush option in the Rectangle tool sub-menu:

- Click the To Brush icon in the Rectangle sub-menu. Notice that the fill icon has been automatically selected as well.
- Press and hold a mouse button and draw a rectangle on the Page. When you release the mouse button, the rectangle is transferred to the brush leaving whatever was underneath it untouched.

Use the same technique to create elliptical brushes using the Ellipse tool.

Creating outlined rectangular and elliptical brushes

As you saw above, when creating a brush using the Rectangle and Ellipse menus, the fill option was automatically selected. Because of this, we need to use a special trick to create outlined brushes as follows:

- Click the Fill tool with the right mouse button to display the Fill sub-menu and click the button labelled OUTLINE.
- Now create a rectangular or elliptical brush exactly as described above.

This time, when you release the mouse button the rectangle or ellipse is filled using the Outline mode, creating an outlined brush. You'll find out more about the Fill options later on in this chapter.

Loading and saving brushes

Brushes are really just small pictures which can be loaded and saved in the same way that pictures can, so that you can build up a library of brushes to use in your work. When you load a brush, it may come with its own palette – the one which was used when it was created. In this case you will be asked if you want to change your current palette to match the one that the brush used, or remap the brush colours to the closest matching colours in the current palette.

In the Brush sub-menu there are a number of options which allow you to change a brush in various ways. Let's load a brush from the **DeluxePaint**

ST art disk to see how these options work:

- Insert the **DeluxePaint ST** art disk. Click LOAD in the Define Brush sub-menu to display the File Selector, double click the TUTORIAL directory then double click the BRUSHES directory to view the files contained within it and click the file name BOBSLED.IFF. Finally, click OK to load it.
- The BOBSLED.IFF brush comes with a different palette to the one you are using, so a message is displayed asking you whether you want to use the brush palette or remap the brush. Click USE PALETTE and from the freehand draw sub-menu select the continuous freehand mode icon (on the left). Now paint with the brush.

Do you see why this brush is called Bobsled? Experiment with some of the other brushes on the disk to see how they work, remembering to select USE PALETTE each time to see the brush in its original colours.

Try loading the brush called FIREWORK.IFF, but this time click the Palette icon with the left mouse button to start the colour cycling. Fireworks comes complete with colour cycling information, and is a spectacular example of the power of this feature.

Other brush-related operations

There are a number of other ways to modify the brush including rotating, stretching, re-sizing and changing the colours. These are described in more detail in Chapter 9: the Reference section, but we will look at them briefly here so that you'll know what's available.

Old

When you choose a built-in brush to use, any defined brush that you created is temporarily lost. This means, for example, that if you want to stamp a brush at some point on your picture and then neaten it up using, say, the built-in one pixel brush, you will need to recover the defined brush to use it again. To do this, simply click OLD in the Define Brush sub-menu.

Note that you can only create one defined brush at a time, so if you create a new defined brush you will not be able to recover the last one using OLD. The way round this is to temporarily store any brushes that you think you may need again in a spare buffer, or save them on disk so that you can load them again later.

Recolour

When you select a colour from the palette while using a defined brush, all the colours in the brush will change to the colour you chose. To recover the original colours of the brush when it was defined, click RECOLOR in the Define Brush sub-menu. Note that RECOLOR also automatically selects the old defined brush if you are currently using a built-in brush.

Set Grip

When you grab a brush, the pointer is automatically placed at its centre. Set Grip allows you to move the pointer to a position offset from the brush. This can be useful if you are using a small brush and find that the pointer gets in the way. Certain features of **DeluxePaint ST**, such as Rotate and Flip, also use the pointer position as the axis about which the brush will be modified. To set the grip:

- Click SET GRIP in the Define Brush sub-menu and move the pointer onto the Page. Press and hold the mouse button while moving the pointer away from the brush to the position required. Release the mouse button to fix it.

Distorting the brush

Clicking DISTORT in the Define Brush sub-menu displays the brush distortion options available.

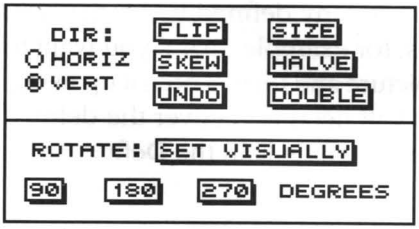


Fig 4.2: *The Distort brush sub-menu*

Simply click FLIP, SKEW, HALVE or DOUBLE to use these options. Click the HORIZ or VERT button to flip or skew along the horizontal or vertical axis. Clicking SIZE allows you to change the size of the brush visually:

- To size a brush, click SIZE and move the pointer onto the Page. Press and hold the mouse button while moving the pointer to adjust the brush to the size required. Release the mouse button to finish.

You can also rotate your brush either through fixed amounts (90, 180 or 270 degrees) or visually as follows:

- Click SET VISUALLY and move the pointer onto the Page. Press and hold the left mouse button while moving the pointer to rotate the brush to the desired angle. Move the pointer up and left to rotate the brush anti-clockwise, down and right to rotate it clockwise. The angle of rotation is displayed in place of the X coordinate. Release the mouse button to fix it.

Hiding the pointer

You may find that the pointer gets in the way of your brush sometimes, particularly if the brush is a small one. To hide the pointer, press Delete on the keyboard. Press Delete again to reveal the cursor.

3. The Screen

In **DeluxePaint ST** some tools affect only parts of the screen (such as brushes and drawing tools) while others affect the whole screen. In this section we will take a look at those tools which affect the whole screen.

Hiding the Toolbox and Palette

DeluxePaint ST allows you to paint on the entire screen even though part of it is obscured by the Toolbox and Palette. In chapter 2 we learnt how to scroll the screen using the slider bar or the up and down arrow keys to see the rest of the screen, but you can also do this by hiding the Toolbox and Palette.

- To hide the Toolbox and Palette and display the whole page, press the spacebar. Press the spacebar again to bring them back.

Note that many of the tools can still be accessed using keyboard equivalents even when they are hidden – see Appendix B: for a list of keyboard commands.

Using the Zoom Monitor

As you saw earlier, you can scroll the view in the Zoom Monitor using the cursor keys, but a much quicker way of zooming in on an area of your drawing is to use the Magnify tool.

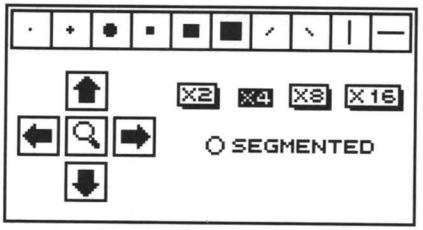


Fig 4.3: *The Magnify sub-menu*

- Click with the right mouse button on the Magnify icon to display the Magnify sub-menu. Click the magnifying glass. Notice that the pointer has become a magnifying glass. Move the magnifying glass over the area you wish to magnify and click.

You can also scroll the zoomed area by clicking the scroll arrows around the magnifying glass.

Notice the zoom buttons in the Magnify sub-menu. To change the magnification, simply click on the zoom setting required.

Another feature of the Zoom Monitor is the Segmented display mode. When you click the Segmented button, each pixel in the zoom monitor is given an outline to make it easier to see how the individual pixels are arranged. This works at all magnifications except x2 where the pixels are too small to display an outline around them.

Grid

The grid restricts the drawing tools onto invisible grid points. This can be very useful for lining up images on the page, for example drawing a series of boxes of exactly the same height. You can also use it to draw an evenly spaced pattern, such as rows of bricks, by painting with a suitable brush using Dotted Freehand mode. To draw using the grid:

- Click the Grid icon, then click the Dotted Freehand option in the Freehand Draw sub-menu. Now paint on the screen.

Try using some of the other tools to see how the grid affects them. You can use the grid to draw evenly spaced patterns with the Freehand Draw tool or use it to place objects accurately on successive frames of an animation.

You can change the spacing between the grid points and the offset from the top left corner of the Page by entering new values in the Grid sub-menu:

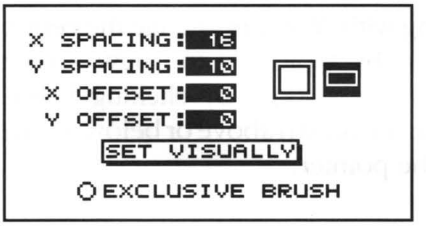


Fig 4.4: *Grid sub-menu*

- Click the Grid icon with the right mouse button to display the Grid sub-menu. Notice the settings for X and Y spacing and X and Y offsets. To change one of these, click on the setting required, press Esc to clear the current value and type in the new value.

You can also set the grid visually:

- Click SET VISUALLY in the Grid sub-menu and move the pointer onto the Page. Notice that the pointer now has a grid matrix attached to it.

- Move the top left corner of the grid matrix to where you would like the grid to start. Now press and hold the mouse button while moving the mouse to expand the grid to the size required. When you release the mouse button the new settings will be automatically entered into the grid sub-menu.

Note that if the first and last colours in the palette are the same, the grid cannot be seen when adjusting visually.

Mirror

This option causes a mirror image of your brush to appear on the opposite side of the page so that a mirror image copy of whatever you paint will be drawn. Try it out:

- Click the Mirror icon and paint anything on the Page using the Freehand Draw tool.

The reflected brush is drawn the same distance from the centre of reflection as the brush you are drawing with. You can change the centre of reflection in the Mirror sub-menu by typing in the new screen coordinates, or using the SET VISUALLY option. By clicking VERT, HORIZ or DIAG the reflected brush can be drawn above or below, to the left or right, or diagonally opposite the pointer.

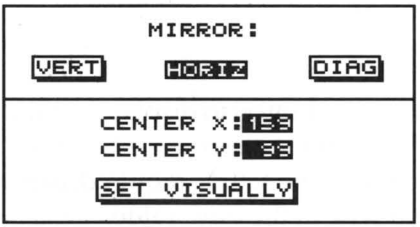


Fig 4.5: *The Mirror sub-menu*

Note that Mirror only works with Freehand Draw, Straight Line, Curve, Airbrush and Text tools and when drawing unfilled rectangles and ellipses. The other tools are unaffected.

Buffers

A unique feature of **DeluxePaint ST** is its ability to hold several drawings in memory at the same time. In fact, the number of drawings which you can load at once is limited only by the amount of memory that you have free on your machine. This can be very useful for cutting and pasting between drawings. You can even load several animations so that you can see how they look before incorporating them with the one you are working on for example.

Colour cycling and stencil information are defined independently in each buffer. This means that you can copy the drawing you are working on to another buffer before attempting some palette changes for example, and simply copy the original back again if you are not happy with the results.

Switching buffers

The Disk sub-menu contains the options which allow you to add buffers and select a buffer to display.

The best way to see how the buffers work is by using them:

To add a buffer:

- Click the right BUFFER button (▶ to the right of the current buffer number) in the Disk sub-menu to add a buffer.

The screen will change to display the new, blank buffer (blank page). You can now draw or load a picture into the new buffer. You can add further buffers by clicking again on the right BUFFER button.

There are two ways to switch buffers:

- Click the left BUFFER button (◀) to view the previous buffer; click the right BUFFER button (▶) to view the next buffer. When you reach the last buffer, a new buffer will automatically be added. You can also do this from the keyboard by pressing (to view the previous frame or) to view the next one.
- Click the left FIND button to view the previous buffer; click the right FIND button to view the next buffer. Using the FIND buttons will only display buffers which contain drawings.

Note: Any buffers which have been cleared (using CLR) will be automatically deallocated when a different buffer is chosen to display.

4. The Palette

In this section you will see how to select and modify colours in the Palette, create colour spreads and organise the palette. You can find out more about using the palette by working through the tutorials or reading the entry on the Palette in the Reference section.

The Palette sub-menu

DeluxePaint ST can display 16 colours on the screen at any one time chosen from a range of either 512 colours if you are using an ST or 4096 on an STE. Editing the colours in the Palette is carried out from the Palette sub-menu.

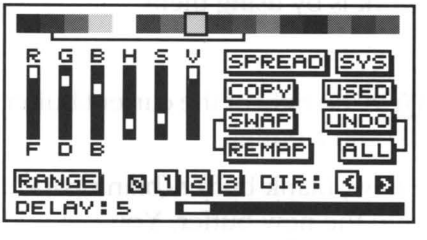


Fig 4.6: The Palette sub-menu

Single modifications (except Remap) can be undone by clicking UNDO in the Palette sub-menu. Click ALL (undo all) to reset all the changes which have been made since the Palette sub-menu was selected.

- To display the Palette sub-menu, click the Palette icon with the right mouse button.

Modifying colours

In the Palette sub-menu there are six sliders which are used to set the currently selected colour in the palette displayed above them. The sliders labelled R, G and B are used to set the amount of red, green and blue in the colour – these are known as primary colours, and any other colour can be created by mixing different proportions of these. The other three sliders really do exactly the same job but in a different way. They represent the Hue, Saturation and Value of the colours. The Hue is the actual colour, the saturation is the amount of white in the colour and the value is the amount of black.

Notice that when you move the RGB sliders, the HSV sliders move correspondingly.

Use whichever method you prefer to modify colours in the Palette.

Arranging colours

There are two ways to move colours around in the Palette, Swap and Remap. They work as follows:

- To swap two colours, click the first colour to swap, click SWAP and then click the second colour. The positions of the first and second colours in the Palette are exchanged, and the colours are swapped wherever they occur in your picture.
- To remap two colours, click the first colour to remap, click Remap and then click the second colour. The positions of the first and second colours in the Palette are exchanged, but the picture is unaffected. This is useful for grouping similar colours together in the Palette without affecting the picture.

You can also copy a colour from one position in the palette to another. This is useful if you need to create a copy of a colour with a slightly different shade. To copy a colour:

- Click the colour to copy, click COPY and click the position to copy the colour to.

Creating spreads

You can create an even spread of shades between two different colours using the Spread option in the Palette sub-menu.

- Click the colour to spread from, click SPREAD and click the colour to spread to. All the colours in the Palette which lie between the colours chosen are set to a series of intermediate shades.

Defining ranges

Ranges are used in **DeluxePaint ST** for colour cycling, gradient fill and some brush modes. Gradient fill and colour cycling is covered in detail in the tutorials in the next chapter. You'll find more about brush modes later in this chapter. To define a range:

- Click the first colour in the range, click RANGE and click the second colour in the range. The range is indicated by a bracket which connects the first and last colours.

You can define up to four ranges and set the cycling speed and direction for each range (this is explained in Chapter 5: Painting Tutorials).

Used

While you are working on a drawing, you will often want to define a new colour. If you are not sure which colours have not yet been used in your drawing, click USED in the Palette sub-menu. All the colours that have not yet been used will be set to black. Of course, if one of the colours you are using is already black, it is a good idea to make a note of its position in the palette before clicking USED.

5. Modifying drawing tools

The first seven icons in the toolbox represent the tools which you can use to draw on the screen. Each of these tools can be modified to carry out

the exact task required by selecting from a range of options in their associated sub-menus. The following is a brief description of what options are available for modifying each of the drawing tools.

The built-in brushes

At the top of each of the drawing tool sub-menus (except the Fill tool), a selection of brush shapes is displayed.

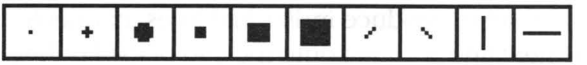


Fig 4.7: *The built-in brushes*

There are ten built-in brushes, any of which can be selected simply by clicking the shape required. Brushes are used by all the drawing tools except when drawing solid ellipses or rectangles. Even the Airbrush works by spraying copies of the current brush.

The Freehand Draw tool

As we saw earlier, there are three modes available in the Freehand Draw sub-menu: continuous freehand mode which ensures that lines are always drawn continuously with no gaps, dotted freehand mode which works faster but leaves gaps when you move the mouse quickly or use a large brush, and filled freehand mode which allows you to draw a freehand shape which is then filled using the current fill settings when you release the mouse button. To select one of these modes, click its icon in the Freehand Draw sub-menu.

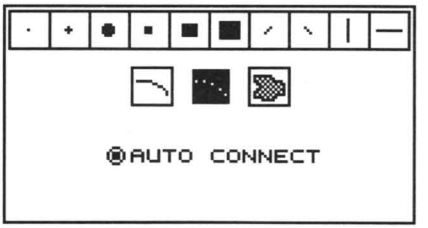


Fig 4.8: *The Freehand Draw sub-menu*

At the bottom of the sub-menu there is a button labelled AUTO CONNECT. When this is selected (the button is filled) **DeluxePaint ST** automatically switches between continuous freehand mode when using built-in brushes and dotted freehand mode when using defined brushes. Click the button to toggle this option on and off.

The Straight Line tool

The Straight Line tool can be set to produce individual lines, connected lines where the start of the next line is joined onto the end of the last line, or star formation lines where every line starts from the same point. To use these modes, click the required icon in the Straight Line sub-menu. When drawing connected or star lines, click the Straight Line tool each time you want to start a new line.

There are two other features which can be set when drawing lines: Quick Draw and Segmentation. These options are also available in the Curve, Rectangle and Ellipse sub-menus, ie all the tools which involve line drawing.

Quick Draw is used to speed up the positioning of a line before it is fixed. It does this by using a single pixel brush to draw the line while you are adjusting it, and only uses the current brush to draw the line in its final position when you release the mouse button.

Segmentation allows you to draw a dotted line. You can specify segmentation by the number of points which make up each line (click the button labelled BY # OF POINTS) or by the distance in pixels between each dot (click the button labelled BY DISTANCE).

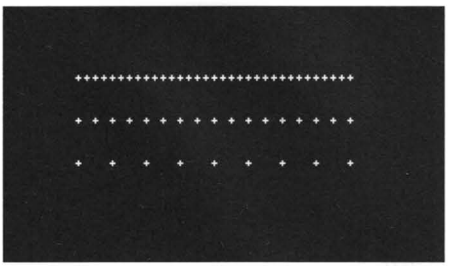


Fig 4.9: *Lines drawn with different segmentation settings*

As with all **DeluxePaint ST**'s edit fields, you can alter the current values by clicking on the edit field, pressing Esc on the keyboard to clear the old number and typing the number required from the keyboard or keypad. Press Return or Enter to finish entering the number.

The Curve tool

The Curve tool sub-menu contains the built-in brushes, Quick Draw and Segmentation options described earlier.

The Rectangle tool

The options in the Rectangle sub-menu allow you to draw outlined or filled rectangles and constrain the Rectangle tool to draw visually perfect squares. When drawing outlined rectangles, the Quick Draw and Segmentation options used for drawing lines can be selected.

The To Brush option which allows you to create rectangular brushes is described at the beginning of this chapter.

The Ellipse tool

The Ellipse sub-menu contains the same options as the Rectangle sub-menu described above except that the Rectangle and Square icons are replaced with an Ellipse option and a Circle option which constrains the Ellipse tool to create visually perfect circles.

The Airbrush

The SIZE option in the Airbrush sub-menu allows you to change the size of the spray nozzle. To do this:

- Click SIZE and move the pointer onto the Page. Press and hold the mouse button and draw out a circle representing the nozzle size required. Release the mouse button to fix it.

The palette displayed at the bottom of the Airbrush sub-menu is used to specify how much of each colour is sprayed by the Airbrush when the PALETTE option is selected. The Airbrush sprays the current brush using a colour randomly chosen from the colours selected in the palette. The higher the slider setting for a colour, the more often that colour will be sprayed. Click BRUSH to use the current brush colours.

The Fill tool

You can create a new fill pattern by cutting out a brush and then clicking the Fill icon in the Fill sub-menu. This will create a pattern made up of copies of the current brush. Note that it also takes into account any blank space that was picked up with the brush, so if you want your brush pattern to be made up of joining copies of the brush for example, you will need to pick up the brush with no blank space around it.

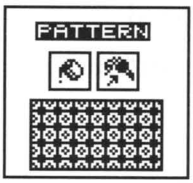


Fig 4.10: *Creating a fill pattern*

- Click PATTERN in the Fill sub-menu to select Pattern fill mode when you want to fill an object with the current pattern.

Note that you can also recover the brush that was used to create the pattern by clicking the Pattern-To-Brush icon. This will change the current brush to the brush used to create the fill pattern. You can use this feature to store a defined brush for use later, allowing you to create another defined brush in the mean time.

Fx 6. The brush modes - FX

The FX sub-menu contains the options which change the way in which the colours are applied to your drawing when you paint.

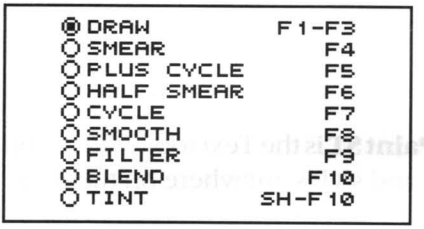


Fig 4.11: *The Brush Modes sub-menu*

Some of the options, such as Draw and Cycle, are used to change the way the paint is applied, while others, such as Smear, Blend, Shade and Smooth modify the paint that is already there.

Brush modes are described in detail in Chapter 8: Reference section, but for now, let's take a look at two of them:

- Return to the default palette settings by clicking SYS in the Palette sub-menu and then select one of the grey colours as your foreground colour.
- Click the largest round brush from the Freehand Draw sub-menu. Now click the button labelled CYCLE in the FX sub-menu and draw a squiggly line. See how the colours change as you paint? What is happening is that the brush is cycling through each of the colours in the current Cycle Range as you draw.
- Click SMEAR in the FX sub-menu and paint over the top of your drawing. Notice how the colours are smeared as you draw the brush over them.

Notice that when you click DRAW the FX icon is automatically deselected. You can also toggle between another drawing mode and DRAW, the default mode, by clicking the FX icon with the left mouse button. Feel free to try the other drawing modes, but note that some of them may

produce disappointing results before you understand fully how they work, so do look up brush modes in the Reference section to find out more. When you have finished experimenting, set the Brush mode to DRAW before going on.

7. Text

Another powerful feature of **DeluxePaint ST** is the Text tool. With it you can type text in a wide range of sizes and styles anywhere on the Page.

To type text on the Page:

- Click the Text icon, move the pointer onto the Page and click where you want to start typing. Type the text you want and click the mouse button when you have finished.

Press Return to start a new line below the one you are typing. You can change the colour of your text by choosing a colour from the palette. Remember the rule when you want to start typing - click the left mouse button to use the foreground colour, and the right mouse button to use the background colour.

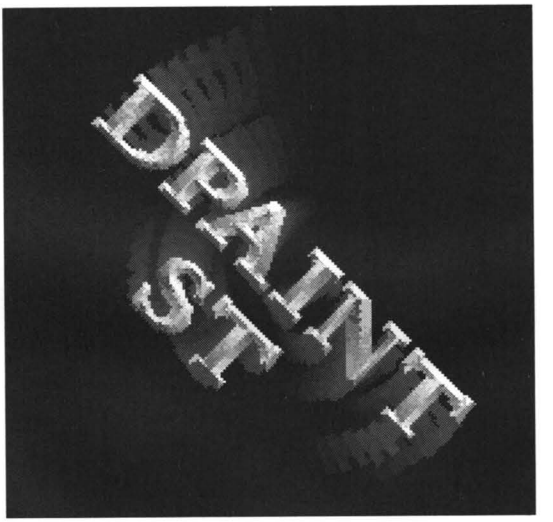
Text characters are really just brushes, so you can also choose different brush modes to type with (although some, such as smear, will obviously have no effect). Try Cycle mode for example.

You can load in a number of different single colour or multi-coloured fonts to use. A full explanation of the options available is given in Chapter 6: Working with text.

8. Keyboard Equivalents

Almost every tool and option in **DeluxePaint ST** can be obtained by pressing a key or combination of keys (you may have noticed, for instance, the keyboard equivalents listed next to the options in the Brush Mode sub-menu). A full list of keys and their functions is given in Appendix B.

Chapter 5



Painting Tutorials

Notes

Chapter 5
Painting tutorials

This chapter contains a number of tutorials to introduce some of the more powerful features of ***DeluxePaint ST****. If you follow them carefully, you will find the tutorials are an excellent way to learn about* ***DeluxePaint ST*** *and pick up a few hints and tips along the way. Even if you are an experienced graphics artist, you will find these tutorials a good way to 'get into'* ***DeluxePaint ST****.*

Before you begin, make sure you have the following things handy:

- The **DeluxePaint ST** Art disk. This disk contains the special files and artwork you'll need for the tutorials.
- A blank, formatted floppy disk to save your work on.

Tutorial 1: Working with the Palette

Any picture created with **DeluxePaint ST** is, in reality, simply a collection of pixels of various colours. Since the Atari ST only lets you use a maximum of 16 of the 512 different colours available (4096 on the STE), it is well worth spending a little time learning how to choose the best range of colours for your drawing.

In this chapter we will be looking at the way **DeluxePaint ST** mixes Red, Green and Blue to form other colours, and the relationship between the RGB and HSV colour systems.

The reference palette

Although your picture may appear to contain many colours, all the colours that you see are, in fact, made up of various proportions of just three basic colours - Red, Green and Blue. Let's see how this works in practice. Load the file named PALETTE.IFF which is in the PICS directory in the TUTORIAL directory of the Art disk:

- Insert the Art disk in a drive. Click the Disk icon to display the Disk sub-menu and click LOAD. A list of directory names will now be displayed. Double click the directory named TUTORIAL, and then double-click on the directory named PICS to display the files within it. Click the file named PALETTE.IFF and click OK to load it.

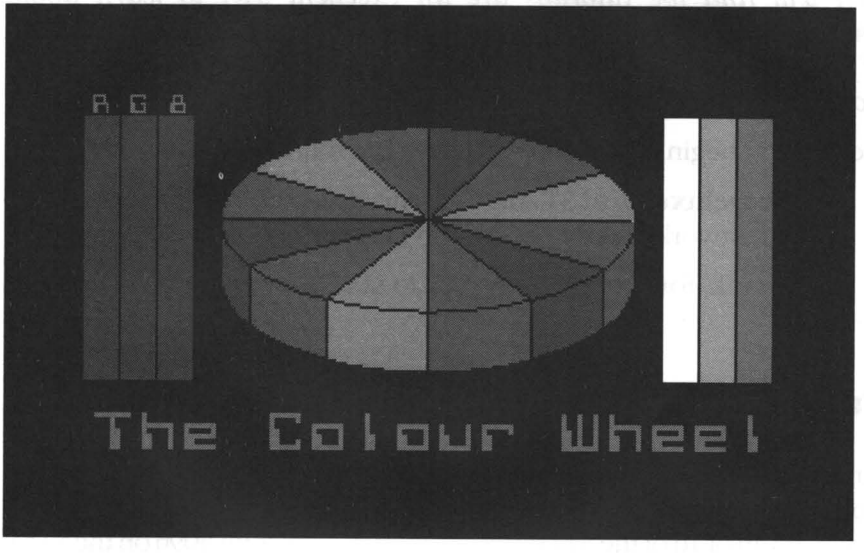


Fig 5.1: *The Reference Palette*

Press the Spacebar to view the entire picture. The Palette picture contains a range of colours displayed in the form of a colour wheel in the middle of the picture. Also displayed are three bars of red, green and blue and three bars of white, light grey and dark grey.

Adjusting the sliders

Let's take a look at one of the colours to see how the R, G and B sliders are set.

- Press the spacebar to display the toolbox again and select the Palette sub-menu by clicking with the right mouse button on the Palette icon.

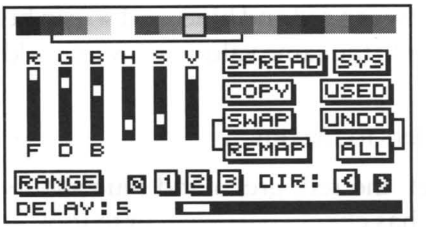


Fig 5.2: *The Palette sub-menu*

Notice that there is a copy of the Palette displayed along the top of the sub-menu and a row of six sliders which are used to adjust the colours. You'll find more details about the other options in the Palette sub-menu in Chapter 4: The elements.

Click the red colour in the palette in the sub-menu. This colour is pure red with no green or blue, so the R slider is set to maximum and the G and B sliders are set to minimum. Notice that there is a number below each RGB slider that indicates the exact setting of the sliders.

Let's try adjusting one of the sliders:

- Move the pointer over the R slider and press and hold the mouse button. Move the slider down and up and watch the effect this has on the colour. You can see this best by looking at the red block on the picture.

Notice that as you move the slider down, the colour becomes darker. The computer screen displays colours with different brightness levels, so reducing the setting of a colour has the effect of reducing its brightness.

Let's try adding another colour.

- Set the red slider to maximum again, and then move the green slider to maximum also.

See what happened? The colour changed gradually to yellow. This is the colour you get when you mix red and green light together. If you move the green slider slowly up and down you will see how the colour changes gradually from red through orange to yellow. If you look at the colour wheel in the picture you will see that yellow lies between red and green. You can use the colour wheel to work out how to create other colours.

For example, magenta lies half way between red and blue, and so can be made by setting the red and blue sliders to the same values. Now let's add a third colour.

- Set the red, green and blue sliders to maximum.

The colour has changed to white. Set the red, green and blue sliders together to half way. Now the colour has changed to grey, or to look at it another way, dark white! When you mix red, green and blue light together in equal quantities, you get a shade of grey ranging from black to white. Set one of the RGB sliders a little higher than the others and you get a subtle tint of colour, for example with the green slider set to maximum and the red and blue sliders set one step down, you get white with a hint of green.

Hue, saturation and value

While you were adjusting the R, G and B sliders, you may have noticed the H, S and V sliders moving at the same time. These sliders do exactly the same thing as the RGB sliders, but in a different way. To see how they work, let's start by adjusting the Hue slider:

- Click ALL (undo all) in the palette sub-menu to reset the sliders to their original positions before you started adjusting them. Now move the H slider slowly to the top, watching the colour change as you do so.

The hue slider controls the colour chosen, so when you move the slider the colour changes through the spectrum from red through green and blue and back to red again. This is the same order as the colours appear on the colour wheel in the picture you have loaded.

Because there are so many colours to choose from, you may find it difficult to select exactly the colour you want by moving the hue slider up and down by clicking and sliding it. Another way to move it is to click on the black area above or below the slider. This moves the slider up or down by one increment at a time. You can use this method to adjust any of the sliders you come across in **DeluxePaint ST**.

- Click ALL to undo the palette changes. Now move the S slider down and watch the red colour change.

Saturation represents the amount of white in a colour. A fully saturated colour (ie saturation set to maximum) is one in which there is no white. This is sometimes called a pure colour. As the saturation is reduced, the colour becomes 'weaker'. This is how you create pastel shades. When saturation is set to zero there is no colour left at all and in this case you are left with white.

- Undo the palette changes again and then move the V slider downwards, watching the red colour as it changes.

This time, the lower the setting of the slider the closer to black the colour became. Value represents the brightness of the colour. When the value is set to zero there is no brightness, and hence the colour appears black regardless of the settings of the other sliders.

The best way to learn how colours work, and how to get just the colour you want is to practise, so try creating some colours of your own. A couple of hints might come in useful here:

- To get a shade of grey, set the saturation slider to minimum (no saturation = no colour) and move the value slider up and down until you get the shade you want. Notice that when you do this, all three RGB sliders stay in line while moving up and down.
- To find a pure colour, set the saturation and value sliders to maximum and move the hue slider up and down until you get the required colour. Remember that you can click on the black area above and below the slider to move it more accurately.

Printing colours

Your printer doesn't use the same primary colours as the screen, but instead will probably use a combination of cyan (sky blue), magenta (purple), yellow and black inks. Because of the technique used, some colours may not print out as well as others, so you may want to adjust your palette to get the best results. To see which colours work best with

your printer, print the PALETTE.IFF file you were experimenting with earlier.

Refer to Appendix A: to find out how to print pictures using the DeluxePaint ST Print utility.

Creating colour spreads

DeluxePaint ST contains many advanced features which allow you to carry out operations that would have taken hours using conventional methods. One of these features is the gradient fill mode which allows you to draw or fill objects with smoothly graduated shades of colour. In order to use this and some of the other features in **DeluxePaint ST** to their full advantage, the palette must first be organised so that you have a suitable spread of colours to work with.

- Click the Palette icon with the right mouse button to display the Palette sub-menu. Click SYS to restore the palette to its original state when you first started **DeluxePaint ST**.

Now define the start and end colours of the spread as follows:

- Set the third colour in the palette on the Palette sub-menu to red by setting the R slider to maximum and the G and B sliders to minimum. Set the seventh colour to yellow by moving the R and G sliders to maximum and the B slider to minimum.

Create the spread as follows:

- Click the colour you set to red in the palette, click SPREAD and click the colour you set to yellow. **DeluxePaint ST** calculates a range of colours from red through orange to yellow.

You can also extend a spread to another colour:

- Click the eleventh colour in the palette and set it to green. Create a spread between this colour and yellow by clicking SPREAD and then clicking the yellow at the end of the previous spread.

You should now have a spread of colours ranging from red through yellow to green. To see what effects can be created using this spread, you first need to set up a range extending from the first colour in the spread to the last:

- Click the red colour in the Palette sub-menu, click RANGE and click the green colour. The range you have defined is indicated by a line between the first and last colours.

To create a graduated fill, we will need to set the fill mode. This is done from the Fill sub-menu:

- Display the Fill sub-menu by clicking the Fill icon with the right mouse button. Notice the colours in the current range are displayed at the bottom left of the menu. Click GRADIENT to select the Gradient Fill mode.

Now we can see what effect all these changes have when drawing filled shapes:

- Click the Ellipse tool with the right mouse button to display the Ellipse tool sub-menu and click the Fill icon to select Filled Ellipse mode. Position the pointer on the Page where you want the centre of the circle and press and hold the left mouse button while moving the mouse to expand the circle. Release the mouse button to draw it.

After a short time the circle is drawn filled from left to right with a smoothly graduated range of colours. Try changing the colour cycling direction for the range (click the left button labelled DIR: in the Palette sub-menu). This causes the colours to be filled in the opposite order.

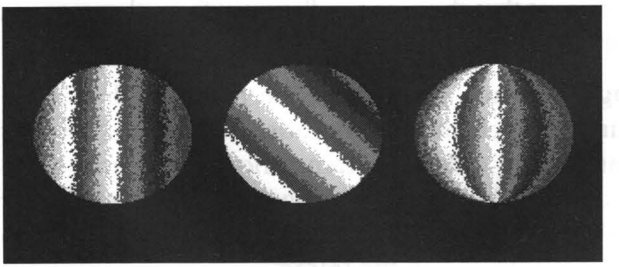


Fig 5.3: *Horizontal, angled and contour filled circles*

Let's try another option in the Fill sub-menu:

- Display the Fill sub-menu and click the button labelled CONFORM. Now draw another filled circle as described above.

Notice that this time the shades are moulded to the contours of the circle giving a sort of 3D effect. Try experimenting with different shapes and different spreads and fill ranges. Move the Gradient slider in the Fill sub-menu to see what effect this has, and try entering a different fill angle by clicking on the edit field labelled ANGLE: (Press Esc to clear the old value and Return when you have typed in the new one). The Fill options are described in more detail in Chapter 8: Reference.

Animation with colour cycling

Using the colour cycling feature of **DeluxePaint ST** you can create a number of effects that add life to a still picture. To see the sort of things that can be achieved, load the file named EXAMPLE1.IFF in the PICS directory in the TUTORIAL directory of the Art Disk.

Click the Palette icon with the left mouse button, or press the Tab key to start the colour cycling. Four cycle ranges were defined for the animations in this picture. This is how the animations work:

1. **The colour wheel** The wheel was drawn with lines radiating out from the centre. The pie shaped pieces were then filled with adjoining colours from the current cycle range. As the colours cycle, the wheel appears to spin.
2. **The strobing lights** This was drawn in much the same way as the colour wheel, except that the rings radiate out from the centre of each small bulb.
3. **The bouncing ball** Each position of the ball was drawn in a different colour from cycle range 0. Because five of the six colours in this range are black, only one frame shows at a time, as the remaining five are invisible against the black background. Display the Palette sub-menu and change the black colours in this range to any non-black colour to see all the frames.

4. **Falling snow** This was done in the same way as 3 overleaf.
5. **Marquee** This effect was created with only the four colours in cycle range 2. In fact, the "light bulbs" are only flashing on and off. The viewer imagines the motion, just as he does with the real cinema marquee.
6. **The running man** This was done in exactly the same way as the bouncing ball. Notice how the frames overlap slightly.

Take a closer look at some of these examples; display the Palette sub-menu and click on each of the four range buttons (labelled 0 to 3) to see which colours are used. Press the Tab key to stop the cycling. Try changing the cycling speed for a range by moving the slider. If you turn cycling on while you do this, you will be able to see the effect of speed changes as you adjust the slider.

Notice that the delay value is indicated at the bottom left of the sub-menu. When the delay is set to zero, colour cycling is stopped for that range. Each increment represents 1/50th of a second (1/60th of a second in the US), so setting the delay to 50 (60 in the US) results in a delay of about one second. You can also change the direction of cycling by clicking the buttons labelled DIR:.

Tutorial 2: Creating a simple landscape

This tutorial was designed to demonstrate how to use a few of **DeluxePaint ST**'s features to create a simple landscape, with the emphasis on how to use the airbrush and on using the half smear drawing mode.

Before starting this tutorial we recommend that you exit and re-start **DeluxePaint ST** to ensure that all the settings are set to their defaults.

Loading a brush

Load the brush named GRASS.IFF in the tutorial directory of the Art disk.

To do this:

- Click LOAD in the Brush sub-menu to display the files on the disk. Click on the brush named GRASS.IFF in the BRUSHES directory in the TUTORIAL directory of the Art disk and click OK. A message appears asking if you want to use the brush's palette or remap the brush. Click USE PALETTE to use the brush's palette.

The background of your Page has changed to light blue, and a clump of grass is attached to your pointer!

- Click the Airbrush icon with the right mouse button to select it and display its sub-menu. Click PALETTE to select the Use Palette option.

Size the airbrush nozzle size as follows:

- Click SIZE in the Airbrush sub-menu. Move the pointer onto the Page and press and hold the mouse button while moving the mouse to create a circle just slightly larger than the mouse pointer. Release the mouse button to fix the nozzle.

When set to Palette mode, the airbrush uses the colours that are selected in the palette on the sub-menu. In this example, we need to select some yellow and green shades to use. Each colour in the Airbrush sub-menu has a slider associated with it. The higher the slider is set, the more often the colour will be sprayed. When a slider is set to minimum, the colour will not be sprayed at all.

To adjust a slider:

- Move the pointer over the slider to adjust, press and hold the mouse button and move the slider up or down as required.

Use this method to set the yellow slider to around a quarter, the light green slider to half, the middle green slider to three quarters and the dark green slider to maximum.

Also, make certain that all other colours are turned off (colours which have been selected are highlighted - click a colour to select or deselect it).

Now we are ready to start painting:

- Hide the toolbox by pressing the spacebar. You can press the spacebar at any time to hide or show the toolbox in this way. Airbrush the grass onto the bottom of the screen by pressing and holding the left mouse button while moving the pointer back and forth across the screen. Spray across the entire width of the bottom of the screen. Take your time.

Now that we have grass and sky, the next thing we need is a tree:

- Load the brush named TREE.IFF in the BRUSHES directory in the TUTORIAL directory of the Art disk. Select Freehand Draw by clicking its icon and position the tree so that it sits in the grass, somewhere on the left side of the screen. Click the mouse button to draw it. Remember that you can hide the menus by pressing the spacebar. Also, the screen slider, located at the far right of the toolbox, can be used to adjust your view of the picture.

- Load the brush named LEAVES.IFF in the BRUSHES directory in the TUTORIAL directory of the Art disk. Select the Airbrush tool with the right mouse button, select BRUSH from the sub-menu and 'spray' the leaves onto the trees.

Then out comes the sun...

- Display the Ellipse sub-menu and click the Circle and Fill icons (the second and third icons in the sub-menu). Now click the yellow colour in the Palette and draw a circle as follows: position the pointer where you want the centre to be and press and hold the mouse button while expanding the circle to the size required. Release the mouse button to draw it. If you decide you don't like it, just click UNDO and try again.

And the clouds...

- Select the Freehand Brush sub-menu and click the largest round brush from the built-in brushes displayed at the top of the sub-menu. Click the white colour in the Palette and then draw some white clouds in the sky. If you are not happy with the shape of a cloud, you can click UNDO or neaten it up by drawing over it using the right mouse button. This erases the cloud back to the current background colour.

We can make the clouds look more realistic by using one of the more powerful features of **DeluxePaint ST** - the Half Smear painting mode. The half smear mode works by smearing pixels at the boundary between one colour and another with intermediate shades from the current range. Before we can use this option we first need to set up a range of colours for it to use:

- Display the Palette sub-menu and click on the light blue colour in the palette at the top of the sub-menu. Click RANGE and then click on the white colour.

Now you can fluff up your clouds as follows:

- Display the FX sub-menu and click the button labelled HALF SMEAR. Paint over the edges of your clouds to obtain the effect required. Notice that each time you go over the edge it will be smeared some more.

And that's it! your masterpiece is finished. You can save it on a blank disk if you like:

- Insert a blank formatted disk. If you haven't formatted a disk yet, you can do this without leaving DeluxePaint - refer to the section on disk operations in Chapter 9: the Reference section to find out how to do this. Click SAVE in the Disk sub-menu and click on the edit field labelled SELECTION:. Press Esc to clear the current name and type a new name for your picture remembering to add the .IFF extension (i.e. SCENE.IFF). Press Return and then click OK to save your picture on the disk. Remember to replace the Art disk if you want to continue with the other tutorials.

Tutorial 3: Cycling colours

This tutorial was designed to demonstrate how to use the plus cycle drawing mode. The first thing we will do is create a spread of colours to work with. As with all the tutorials, it is best to re-run **DeluxePaint ST** to ensure that all the settings are set to their defaults.

Creating a colour spread

- Click the Palette icon using the right mouse button to display the Palette sub-menu.
- Using the palette displayed at the top of the sub-menu, copy the dark blue colour to position 9 (currently red) by clicking it, clicking COPY and then clicking colour 9. Now copy the white colour in the same way to the rightmost position in the palette. Click the blue colour, click SPREAD and click the white colour to create a spread of colours from blue to white. Create another spread between blue and black (the first colour in the palette) in the same way.

You should now have a palette which contains a whole spread of blues, starting with black and ending with white. Now we need to set the current cycle range so that the plus cycle drawing mode can use all the colours.

- Click the first colour in the palette (black), click RANGE and click the last colour in the palette.

Cutting a brush

Next we are going to create a new brush to paint with:

- Display the Ellipse sub-menu. Click the smallest brush from the built-in brushes displayed at the top of the sub-menu. Click the Circle icon (second from the left) and make sure none of the other options are selected (selected icons are shown highlighted - click an icon to select or deselect it). The circle mode constrains the ellipse tool to draw only perfect circles.

Draw a circle...

- Click the white colour in the palette. Draw a circle on the Page by moving the pointer to where you want the centre of the circle to be and pressing and holding the mouse button while moving the pointer to create a circle about twice the height of the mouse pointer. Release the mouse button to draw it.

...and pick it up to use as a brush:

- Click the Brush icon with the left mouse button and position the cursor at the top left of the circle so that the cross hairs just touch the edge of the circle. Press and hold the right mouse button while moving the pointer to create a box completely surrounding the circle. Release the mouse button to pick up the circle as a brush. If you didn't pick it up correctly, just click UNDO and try again.

You should now have a circular brush attached to your pointer. Select the Plus Cycle drawing mode that we are going to use as follows:

- Click the FX icon with the right mouse button to display the FX sub-menu. Click the button labelled PLUS CYCLE to select this mode.

OK, now it's time to see what all this setting up actually does. Draw a circle on the Page (the circle tool should still be selected). Plus cycle works by replacing the colours under the brush with the next colour in the current cycle range. The effects generated with this function can be quite impressive. Try the other drawing tools. The airbrush can produce particularly interesting results. Drawing by pressing the right mouse button instead of the left mouse button reverses the direction of the current colour cycle range. Try cutting brushes from other shapes and changing the colours in your palette.

Tutorial 4: Using the filter drawing mode

This tutorial was designed to demonstrate how to use another of **DeluxePaint ST**'s powerful drawing modes - the Filter mode. This mode is used to change a range of different colours to a single colour while retaining the original brightness. The effect this has is rather like looking at a scene through heavily tinted glass. You will also find out how to create large brushes directly without having to cut them off the page.

In this tutorial we are going to work on a picture which has already been created on the Art disk:

Loading the picture

- Insert the Art disk, Click the Disk icon to display the Disk sub-menu and click LOAD. A list of directory names is displayed.
- Double click the directory named TUTORIAL and then double-click on the directory named PICS to display the files in it. Click the file named INTRUDER.IFF and click OK to load it.

Next, we need a large round brush to work with. To do this we will use a useful option in the Ellipse sub-menu:

- Click a green colour from the middle of the spread of greens in the palette
- Display the Ellipse sub-menu and click the To Brush icon (the rightmost icon in the Ellipse sub-menu).
- Place the pointer where you want the ellipse to start and press and hold the mouse button while moving the mouse to expand the ellipse to the size required. About 1cm across is fine. When you release the mouse button, the ellipse is removed from the Page and is attached to your pointer.

Note that using the Rectangle tool, you can create rectangular brushes in exactly the same way. Set the drawing mode to Filter:

- Display the FX sub-menu and click the button labelled FILTER. Click the Freehand Draw icon and press the spacebar to hide the Toolbox.

Draw over the picture. Notice that the robot turns green under your brush. The filter drawing mode looks for a colour which has exactly the same value as the colour being replaced and exactly the same hue and saturation as the currently selected brush colour. See the first tutorial in this chapter to find out how a colour is defined in terms of hue, saturation and value.

Notes

Chapter 6

Working with Text

Notes

Chapter 6
Working with text

DeluxePaint ST *incorporates a very powerful text feature with which you can load, create, edit and save fonts and, of course, type! There are also a wide range of fonts provided with* ***DeluxePaint ST*** *that you can experiment with and modify as you wish. In this chapter we will look at the Text tool to see how all of these features can be used.*

The first part of this chapter describes how to use the fonts supplied with DeluxePaint ST, explaining how to load them and how to change the colours, style and size.

The second part explains how to edit a font, describing the features of the characters that make up a font and how to edit the dimension lines and character spacing of a font. The last part of the chapter deals with kerning, a unique feature of DeluxePaint ST fonts.

Using DeluxePaint ST fonts

When you first run **DeluxePaint ST** the default font is loaded into memory. As we saw in Chapter 4: The Elements, you can use this font by clicking the Text tool and clicking the place on the Page where you want to start typing.

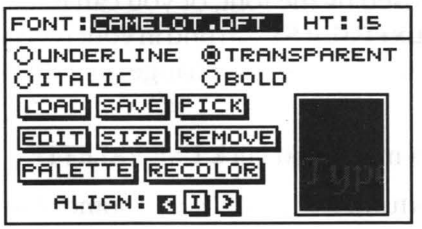


Fig 6.1: *The Text sub-menu*

Loading a font

There are a number of other fonts on the program disk which you can load, so let's take a look at one of them.

- Insert the program disk. Click the LOAD button in the Text sub-menu to display the load font file selector and double-click on the directory called FONTS to display the list of fonts. Click GOLD.DFT and click OK to load it.

To use the font that you have loaded, click the Text tool, click on the Page and type. You can type using a single colour from the palette, or click RECOLOR in the Text sub-menu to use the colours the font came with when it was originally loaded.

There is a tip worth remembering at this point – It is often difficult to see just where your text will need to be before typing it, but if you fix the background before typing the text, you will be able to pick up the text as a brush and move it without affecting your drawing underneath. (see Stencil in Chapter 8: Reference to find out how to do this.)

Changing the palette

You may be wondering at this point why the font you just loaded is called Gold when in fact it seems to be coloured like a rainbow. The reason for this is that the font was originally created using a different palette. There are two things you can do to alter the colours of the font: you can change your palette to be the one originally used by the font, or you can remap the font to use the closest colours **DeluxePaint ST** can find in your palette to the ones used by the font. In this example, we will change our palette to the one used by the font:

- Click PALETTE in the Text sub-menu and click USE PALETTE.

Now you will see that all your text has turned to gold! Try out some of the other fonts on the disk. Remember to click USE PALETTE to see them in their original colours.

Changing colours

As we mentioned earlier, fonts are really just collections of brushes, and in just the same way that you can choose a colour from the palette to paint a brush with, so you can choose a colour to type with. Click RECOLOR in the Text sub-menu to recover the original colours used by the font when it was loaded.

Picking a font

Once you have loaded a number of fonts into memory, you can choose which one to use by clicking PICK in the Text sub-menu. This will display the file selector with the names of all the fonts you have loaded displayed. Click the font required and click OK to select it.

Typing with style

You can set the text tool to type in any combination of bold, italic and underline. These options are selected by clicking the required buttons in the Text sub-menu. Click again on a button to deselect the option. The other button in the sub-menu labelled TRANSPARENT causes the background of the characters in the font to appear transparent when you type. If you deselect Transparent and use the font's original colours (click RECOLOR) then the background colour of the text will also be painted when you type.

Justifying your text

At the bottom of the Text sub-menu you will find three buttons labelled ALIGN:. These are used to set successive lines of text to appear left justified, centred or right justified as they are typed. The point about which justification takes place is the position of the cursor when you click on the Page to start typing. For example, if you select right justify, all the text you type will be set so that the end of each line will line up with the horizontal position of the cursor.

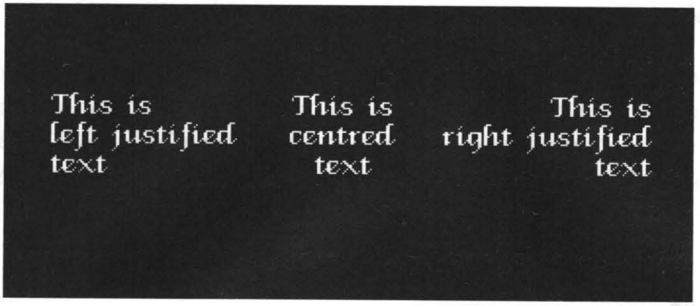


Fig 6.2: *Left justified, centred and right justified text*

- Click the left ◁ centre ▯ or right ▷ align button in the Text sub-menu. If you chose left align, position the cursor where you want the text to begin. If you chose centre align, position the cursor at the point about which you want the text to be centred. If you chose right align, position the cursor where you want the text to end.

Changing the font size

When you load and use a font, it will be typed at the size it was originally created. You can change the size of the font to any number of pixels larger or smaller than the original, but note that some fonts work better than others when re-sized, so you will need to experiment a little to get the best results.

- Click SIZE in the Text sub-menu. This displays the original height of the font and the sized height below it. Click on the sized height edit field, press Esc and type the new height required. Press Return to set it.

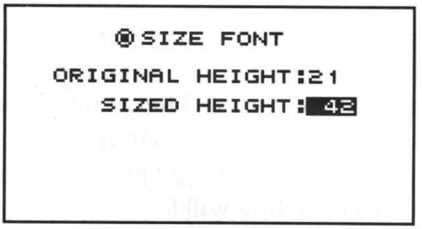


Fig 6.3: *The Text size sub-menu*

Click the button labelled SIZE FONT to deselect font sizing and return the font to its original height.

Removing a font

Once you have several fonts loaded at the same time, you may find that they are taking up quite a lot of room. To remove a font and so recover the memory used by it, first pick the font to remove as described above and then click REMOVE in the Text sub-menu. This removes the font from memory. Note that you will need to pick another font before you can select the text tool again.

Editing a font

The current font can be edited completely from within **DeluxePaint ST**, or a new font can be created. Once a font has been modified or created, it can be saved to the disk drive, and can later be reloaded and used.

Before we attempt to create a new font, let's take a look at one of the fonts that comes with **DeluxePaint ST**. The font we will look at is in the FONTS directory of the Program disk and is called FMLROMAN.DFT.

- Load the font called FMLROMAN.DFT, click the Text tool, click on the Page and type the word "Type". Press Return to move the cursor to the next line and type "this".

DeluxePaint ST fonts contain various information about the size and positioning of the characters. You can display this information on the screen as dimension lines. Let's see what they look like and what each one does:

- Click EDIT in the Text sub-menu to display the Text Edit sub-menu.

Immediately below the Base line is the Descent line. This represents the lowest point of any of the characters in the font and takes its name from the fact that parts of characters that extend below the Base line are called descenders. Like the Ascent line, this line is automatically set and adjusted as you add and delete characters in the font.

The lowest line is called the Bottom line and represents the closest that the highest character in the font on the next line can get to the line above. In our example it is the distance between the bottom of the y in "Type" and the top of the h in "this".

Setting the Base line

Check that the Base line is still positioned at the base of the T in "Type" and click the mouse button. This sets the position where the dimension lines will appear when you edit the Bottom and Half lines as you will see later.

Editing the Bottom line

To see how you can adjust a dimension line in a font, we will change the position of the Bottom line in the current font.

- Click BOTTOM in the Text edit sub-menu and move the pointer onto the Page. Notice the dimension lines have appeared and are in the position you set when you fixed the Base line earlier, except for the Bottom line which moves up and down with the pointer. Move the Bottom line to about an inch below the word Type and click the mouse button.

To see what effect this has had, clear the screen and then type a couple of words at the top of the screen followed by Return and then some more text. See what has happened? When you press Return now, the new line of text appears about an inch below the first line, just as you set it. This is how you set the gap between each line of text.

You can adjust the Half line in exactly the same way.

Adding a character

A font is really just a collection of brushes, one brush for each character in the font. With that in mind, creating a font is simple. The first thing to do is to set the picture's palette to the palette that you want the font to be. Note that fonts take up a lot less room if they are created with only a small number of colours, so if you only intend to type your font using a single colour for example, then it is a good idea to set the palette to two colours. (To do this, Click INFO in the Disk sub-menu and click 2 to select two colours.)

Once you are satisfied with the palette, you can draw a character. For example, if you want to create a new letter 'a', draw it and then cut it out as a brush. Try to cut the brush as small as possible while still containing your character, because the amount of memory (or disk space) taken up by a brush is relative to the size of the brush. Also, it is a good idea to cut 1 pixel too wide on the right side of the character so that when characters are typed there is a space between each character. If you wish to edit an existing two colour font and add more colours, you will need to remap the font to the current palette. To do this, click PALETTE in the Text sub-menu and click REMAP FONT.

When you have cut it out, you can add the character to the current font as follows:

- Select the Text sub-menu and click EDIT. The Text sub-menu is replaced with the edit font sub-menu. Click STORE to store the brush in the current font.

Don't worry if there isn't a current font, because **DeluxePaint ST** will then automatically generate a font with no characters in it as the current font. The sub-menu will switch to the following message, "Type the character to store the brush as in the font, or press the undo key to abort."

- Press the key on the keyboard that you want the brush to be stored as. In our example, press the 'a' key on the keyboard.

Beware of the CapsLock key! The CapsLock must be off to store the brush as a lowercase character. Next, the sub-menu will switch to the following message, "Position the brush in relation to the baseline (broken line) as you want the character to be printed."

- Move the mouse pointer onto the Page. Notice the dimension lines which are displayed. Move the pointer until the 'a' is sitting on the dotted Base line and click the mouse button.

And that's all there is to it! The brush is stored in the current font as the character that you typed, and from now on it will appear when you type the character using the text tool.

Changing the font's description

Each font has a 24 character description, which is used to describe the font. For example, a font may have a filename of "FMLROMAN.DFT" and a description of "FORMAL ROMAN". The description is more explanatory than the filename.

- Click EDIT in the Font sub-menu. This displays the font edit sub-menu. Click the text field at the top of the sub-menu. Type a description of the current font, using the editing keys as needed. Press Return to finish typing.

Saving a font

After you have finished creating or modifying a font, it can be saved to disk for use later.

- Insert a disk to save the font on. Click SAVE in the Font sub-menu to display the file selector. The file selector displays the directory of the drive which you selected. Click with the left mouse button in the text field labelled SELECTION:. Type the name that you wish to save the font as, using the cursor keys as needed. Press Return and click OK to save the font.

Removing a character from the font

Each character in the font will take up both memory and disk space, so what happens if you don't want certain characters in the font? You can delete the unwanted characters using the remove option.

- Click EDIT in the Text sub-menu and then click REMOVE. The sub-menu will change to the following message, "Type the character to be deleted in the font, or press the undo key to abort." Type the character on the keyboard that you want to remove from the font.

Setting the underline colour

The underline colour can be any of the colours used by the font. If the font was created with a palette that only contained two colours, these will be the only colours you can set the underline to, even though your palette may contain many more.

- Click EDIT in the Text sub-menu and then click SET (set underline colour). Move the pointer to the colour in the palette (or anywhere on the screen that contains the colour you want) and click the mouse to pick the colour.

From now on, when you select Underline anything you type will appear underlined in the colour you chose.

Note: Your font must use a palette which contains more than two colours in order for this function to work correctly.

Kerning

When you type each character is normally jammed together so that they are drawn side by side with no space in between them. This is why it is a good idea when creating or editing a font to cut all of the characters 1 pixel wider than the actual character's graphic, so that there is a blank pixel in between each character typed.

Kerning is a technique with which you can specify the spacing between characters in a font when they are typed. In this way you can improve the spacing between two characters by, for example, allowing the brushes that make up each character to overlap each other as in the example opposite:

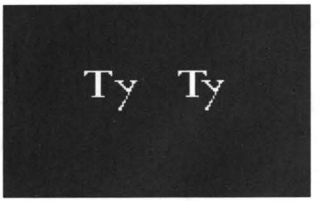


Fig 6.6: *Un-kerned and kerned text*

Many letters in most fonts, eg capitals BCDEFGHKMNRSXZ won't need kerning at all, but the spacing between some characters, such as the T and y in the example above, can be much improved by setting kerning information for them.

There are 6 points of kerning: three points specifying how close the character being kerned can be to the previous character, and three points specifying how close it can be to the next character. Why three points? In most fonts there are three major areas where the width of graphics change: between the Ascent line and the Half line; between the Half line and the Base line; and between the Base line and the Descent line.

Setting kerning points

Let's see how this works by setting the kerning for the letter y in the example font that we are using. First type "Ty" so that you can see the difference after kerning and then set the kerning for the letter y as follows:

- Click EDIT in the Text sub-menu and then click KERNING. The sub-menu will switch to the following message, "Type the character to kern, or press the undo key to abort." Type 'y' and the Kerning sub-menu will appear.

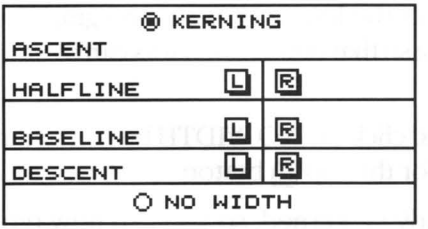


Fig 6.7: *The Kerning sub-menu*

In the Kerning sub-menu there are six buttons, labelled L and R for each of the six kerning points.

- Click the bottom L button and move the pointer onto the screen. The dimension lines are displayed along with the character being kerned, and a vertical line which you can move left and right with the pointer. Move this line until it just touches the leftmost point on the y that lies between the Descent line and the Base line and click the mouse button.

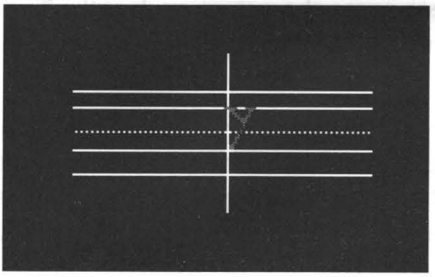


Fig 6.8: *Positioning the kerning line*

The point you have just set represents the closest that any character in the font can get to that part of the y.

To set the corresponding kerning point on the right of the y, click the bottom R button and proceed exactly as above except that this time you need to move the line to the rightmost point between the Descent and Base lines.

Set the left and right kerning points between the Base line and the Half line in the same way, this time clicking the middle L and R buttons.

Now we need to set the kerning points between the Half line and the Ascent line, but between these points the letter y contains no graphics. In this case we need to set the kerning so that other characters can overlap this part of the letter. To do this:

- Click the topmost L button and click the NO WIDTH button so that it appears filled. Repeat this for the top R button.

The T in the example font has already be kerned, so you can now type Ty to see what effect setting the kerning has had.

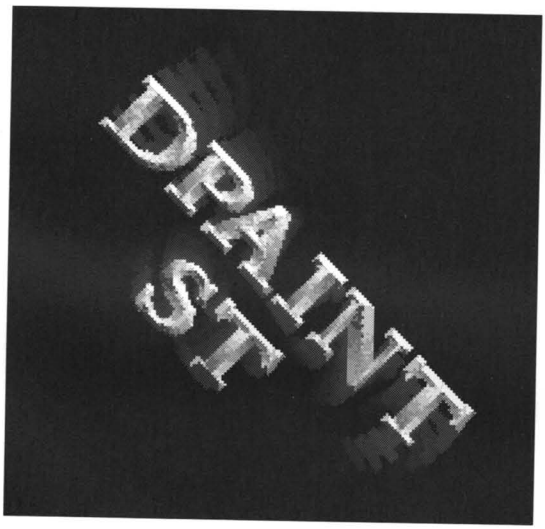
Removing kerning from a character

Setting new kerning points for a character will automatically overwrite the old ones, so you don't need to remove kerning before setting new points. Kerning information does, however, take up six bytes for each character with kerning information in the font, so if you really are short of space you can recover some by removing kerning from these characters.

- To remove kerning, click EDIT in the Text sub-menu and then click KERNING. Type the letter from which you want to remove the kerning information. The kerning sub-menu will now appear. Click the button labelled KERNING to deselect it and remove kerning from the character.

Notes

Chapter 7



Animation

Notes

Chapter 7
Animation

*This chapter introduces you to **DeluxePaint ST**'s animation features. It starts by explaining the basics of animation before leading you on to the various ways in which animations can be produced with **DeluxePaint ST**.*

Before you start this tutorial, it is a good idea to quit **DeluxePaint ST** and restart. This will help to ensure that the results you get when following our instructions are the same as the ones we describe. You will also need to have the Animation disk handy for some of the examples.

Animation basics

The principle behind animation is simple - create a number of pictures, or frames, each with slightly different images and play them back one after the other in rapid succession, thus creating the illusion of movement. This chapter explains how frames are added, drawn on, and played back in **DeluxePaint ST** to create effective animations.

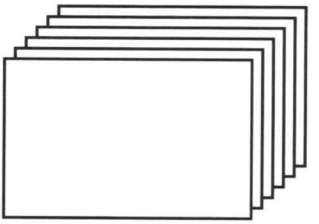


Fig 7.1: *The basic model*

Adding frames

Before you can create an animation, you first need to create a number of frames to paint on. To do this:

- Click the Animation icon to display the Animation sub-menu.

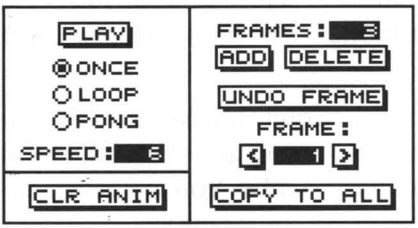


Fig 7.2: *The Animation sub-menu*

You can add one frame at a time by clicking on ADD in the sub-menu, but it is much quicker to add a number of frames by simply typing the number required in the Frames edit field:

- Click the edit field labelled FRAMES: and press Esc to clear the current setting. Now type the number of frames required. In this case, we will need 20 frames, so type 20 in the edit field. Press Return to finish.

You now have a clean set of 20 frames to work with. The more frames you have in an animation, the smoother the animation will be, but at the expense of using more memory.

Undo Frame

You can undo any changes that you make to a frame by clicking UNDO in the Animation sub-menu. If DeluxePaint ST is running low on memory, it may not allow you to leave the current frame. In this case, clicking UNDO will release enough memory to allow you to do this.

Painting one frame at a time

The most basic way to create an animation is to paint a new image on each frame of the animation, making the changes required to create the illusion of movement on each one as you go. Follow the example below to see how this is done:

- Select the Freehand Draw sub-menu and click the largest round brush. Paint a dot in the upper left area of your screen.

The dot you just painted is on frame 1 of the animation. The next dot you need to paint is going to be just to the right of this dot. You can display the next frame by clicking on the button to the right of the frame number in the Animation sub-menu, but this would mean that you would have to move the mouse, and you would find it difficult to line up the brush accurately for the next frame. A better way to switch frames is to use the keyboard.

- Position your brush just to the right of the one you just painted and press the plus key (+) on the keypad to move on to the next frame. Repeat this step, painting each dot just to the right of the last one on each new frame until your first dot appears again on the left of the screen (frame 1 will be indicated in the Animation sub-menu).

You have just created a simple animation. Click PLAY in the Animation sub-menu to play it. You should see the dot travelling from left to right across the screen.

Let's try a slightly more advanced animation. This example uses a number of different brushes to add to the effect of the animation. Before creating this animation you first need to clear the last one.

- Click CLR ANIM in the Animation sub-menu to clear the animation from the memory. When you do so, the following message is displayed:

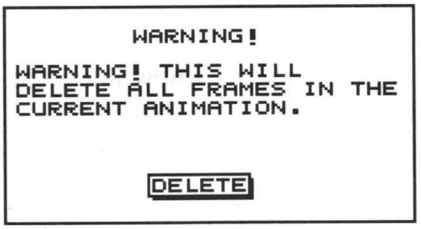


Fig 7.3: *The clear animation message*

- Click DELETE to clear all frames.
- Load the picture named BACKG.IFF in the TUTORIAL/PICS directory of the Animation disk. Set the number of frames to 17 in the Animation sub-menu. This will copy the background to all 17 frames of your animation.

Next we need to load the first brush we will be using for the animation:

- From the Brush sub-menu, load the brush named CAR1.IFF in the TUTORIAL/BRUSHES directory of the Animation disk. Press Return to push the toolbox to the bottom of the screen and press the down arrow key to display the road at the bottom of the screen. As you will see, you still need to see the toolbox so that you can check the X and Y coordinates of the brush before you paste it. These coordinates are displayed at the top right of the Toolbox.

What we need to do now is place this brush on every fourth frame of the animation starting from frame 1, ie frames 1,5,9,13 and 17.

- Move the brush to coordinates X=0 and Y=150 (the lower left edge of the screen) and Click the mouse button to paint it. Advance to frame 5. The best way to do this is to use a keyboard short cut: press the plus key (+) four times or type 005 on the numeric keypad. Paste the brush on this frame at X=80, Y=150.

Repeat the above to paste the brush at Y=150 and the following X coordinates:

Frame 9: X=160
Frame 13: X=240
Frame 17: X=319

If you like, you can press * on the keypad to see how your animation is coming along.

- Load the brush named CAR2.IFF and paste it at Y=150 and the following X coordinates:

Frame 2: X=20
Frame 6: X=100
Frame 10: X=180
Frame 14: X=260

- Load the brush named CAR3.IFF and paste it at Y=150 and the following X coordinates:

Frame 3: X=40
Frame 7: X=120
Frame 11: X=200
Frame 15: X=280

- Load the brush named CAR4.IFF and paste it at Y=150 and the following X coordinates:

Frame 4: X=60
Frame 8: X=140
Frame 12: X=220
Frame 16: X=300

Now press * to play your completed animation.

Tweening

A much quicker and more advanced method to animate a brush is to use **DeluxePaint ST**'s Tweening tool. This tool allows you to specify where you want the brush to start and where you want it to end and **DeluxePaint ST** does the rest, calculating the position of the brush and pasting it on each of the frames between the start and end of the animation. Brushes can be moved through three dimensions from any start position to any end position, and can be rotated through any angle about any axis on the way. Take a look at the diagram below to see how the three axes relate to the position of the brush on the screen.

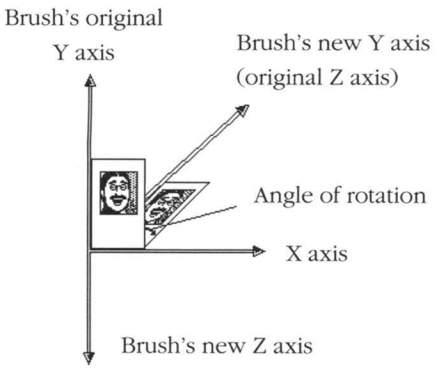


Fig 7.4: *The brush axes*

The origin of the axes used by the tweening tool is set so that an X,Y coordinate of 0,0 represents the centre of the screen. You can move the origin to any point on the screen as we will see later.

The To and From X,Y and Z coordinates

These coordinates specify where the brush is to go to and start from. The X and Y coordinates represent the vertical and horizontal position of the brush, while the Z coordinate adds an element of 3D by allowing you to specify a distance away from the front of the screen: the greater the Z coordinate, the further away the brush will be and hence the smaller it will appear.

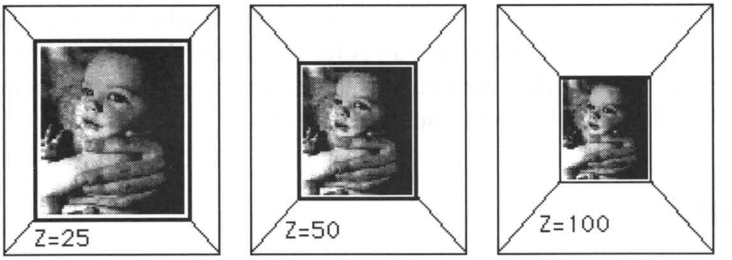


Fig 7.4: *A brush shrinking into the distance*

Let's see how this works in practice by creating a simple animation:

- Create 20 frames for animation (remember to clear any frames which have already been created first).
- Create a large round brush, about 3cm across, using the To Brush option in the Ellipse menu and choose a bright colour from the palette. Display the Tweening sub-menu (click the Tweening icon to the left of the Animation icon) and enter -160 in the From X position field and 160 in the To X position field. Now click PREVIEW and watch what happens.

The Preview option displays a wire frame animation of your brush which allows you to see what your animation is going to look like before you actually carry out the tweening operation. This is a particularly useful feature, since it is often difficult to visualise what the effect of the settings in the Tweening sub-menu will be, and you can't undo a tweening operation once it has been carried out.

- Enter 1000 in the To Z position field and click PREVIEW again.

This time the brush gradually got smaller as it moved from left to right. Notice that the brush didn't go as far to the right as it did last time. This is because the brush is effectively being displayed on a Page far away from the front of the screen, so an X coordinate of 160 will only appear only a little to the right of the centre. In this example you would need to enter a value of about 1000 in the To X field.

DeluxePaint ST also allows you to enter values beyond the boundaries of the screen, so that your animation can start or end off the edge of the display. Experiment with different values in the From and To position fields, click PREVIEW each time to see the effect.

X,Y and Z rotation

The brush can also be rotated about any of the axes by entering values in the rotation fields. You can enter values beyond 360 degrees to produce multiple rotations in your animation. The result of rotating a brush by 45 degrees about each axis is shown in the diagram below.

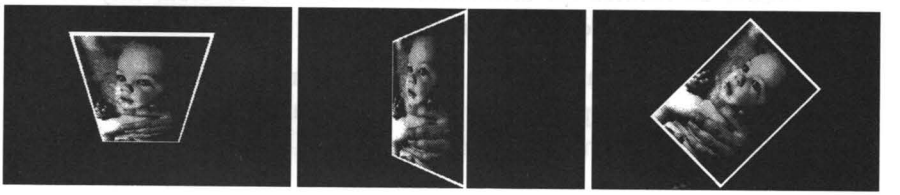


Fig 7.5: *A brush rotated about each axis*

Rotating a brush by 90 degrees will cause it to disappear because you will be looking at its edge. Rotating through 180 degrees will flip the brush completely so that it will appear reversed on the screen. Negative angles have the effect of changing the direction of rotation of the brush in an animation.

Tweening a brush

You can see the effect of combining rotations by tweening a brush. This is a very powerful way of distorting a brush without actually creating an animation.

- Load the brush named CARD.IFF to work with. Paste the brush on the left of the Page so that you can pick it up again later. Display the Tweening sub-menu and clear any old values. Enter 30 in the To X rotation field and 30 in the To Z rotation field. Click the brush icon in the sub-menu to tween the brush. You may have to wait a

couple of seconds while **DeluxePaint ST** performs the calculations.

Move the pointer onto the Page. See what's happened? Your brush has been tilted forwards and rotated through 30 degrees.

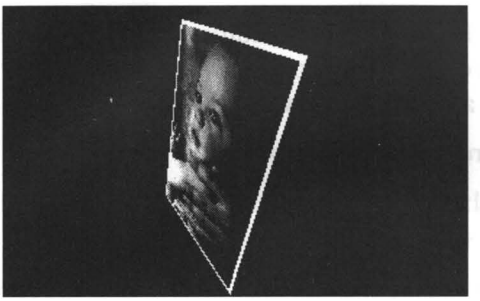


Fig 7.6: *A brush rotated and tilted*

When you tween a brush, **DeluxePaint ST** rotates and distorts the brush according to the values entered in the To Z position field and the To X,Y and Z rotation fields. Obviously, values entered in the X and Y fields will have no effect, as the brush will always appear at whatever X and Y position you move the pointer to.

In this example the brush was tilted forwards about the X axis. To tilt it backwards by 45 degrees, you need to type in a value that will rotate the brush through a complete revolution less 45 degrees, ie 360 - 45 = 315 degrees.

A spinning logo

Here is a slightly more advanced animation to try. In this example we will be creating an animation to rotate a logo as it comes out of the screen towards you.

- Create 50 frames for animation as described in Adding Frames at the beginning of this chapter.
- Load the brush named LOGO and click USE PALETTE to use the brush's palette.

- Display the Tween sub-menu and click FROM (set position to start from). Position the brush roughly in the centre near the bottom of the screen and click the mouse button. (Press the spacebar to hide the toolbox or use the scroll bar to scroll to the bottom of the screen to do this.)

Notice that the coordinates of the brush have been automatically entered into the From X and Y fields. You could have typed the coordinates in by hand, but as you can see, this is a much easier way to do it.

Now we can set the ending coordinates for the brush:

- Click TO, position the brush roughly in the centre of the screen and click the mouse button to set the ending coordinates.

Next, we are going to tell DeluxePaint to start the animation with the brush rotated by -720 degrees. When the animation is created, this will cause the brush to be "un-rotated" 3 times in a clockwise direction. We also want the brush to start way back in the distance, so we need to enter a large value in the From Z position field.

- Enter 1050 in the From Z position field and -720 in the From Z rotation field.

Now you can check your animation by clicking PREVIEW. If it is OK, click TWEEN and sit back while **DeluxePaint ST** draws each of the frames of the animation. When it has finished we need to add 10 frames to the end of the animation. This will cause the animation to pause for a second or two when it reaches the end:

- Display the Animation sub-menu and go to frame 50 by clicking the left FRAME: button (◁) or pressing the minus key on the keypad. Now type 60 in the FRAMES: field. This will copy frame 50 onto the next 10 frames. Finally, enter 2 in the SPEED: field to finish the animation.

Play the animation by clicking PLAY or pressing * on the keypad. Play the animation again but this time click the button labelled LOOP and see what happens. This time the animation is played continuously. Press a mouse button to stop the animation. Clicking the PONG button causes the animation to play forwards to the end and then backwards to the beginning. Try it.

Now that you have learned how the DeluxePaint animation works, it's time to experiment. Try out some of the animations on Animation disk (note that there isn't enough room to load all the frames of the SPACE.IFF animation on a 520ST except using the Viewer utility, described on the reference card). Step through each frame of an animation using the + and - keys on the keypad to see how it was made.

Saving and loading animations

You can save your animation in the same way as a normal picture. When you click OK to save the animation a message will be displayed asking how many frames you want to save:

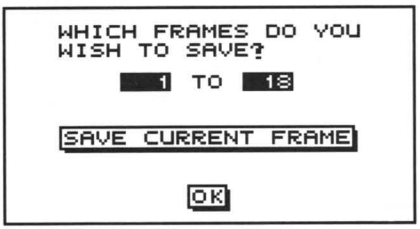


Fig 7.7: ***The save animation message***

Enter the first and last frames you want to save or just click OK to save all the frames. If there are many frames in your animation this may take some time, so be patient! Click SAVE CURRENT FRAME to save only the frame you have been looking at.

You can also load all or part of another animation and join it onto the end of the one you are working on. To do this:

- Load the animation you want to add from the Disk sub-menu. A message will appear asking you which frames you want to load.
- Enter the first and last frames you want to load. These and all the frames in between will be loaded from the animation (all the frames will be loaded by default).
- Click the END button to load the animation at the end of the one you are working on, or click the FRAME button and enter the frame number at which you want the animation to be loaded.

Copying coordinates

You may have noticed the button labelled = between FROM and TO on the Tween sub-menu. This is used to set the FROM X,Y and Z coordinates to match the TO coordinates, and can be very useful if you only want to change one or two of the coordinates between the start and end positions of your animation.

Setting the origin

As you saw above, the further away an object gets from the front of the screen (ie the greater the Z coordinate), the closer it gets to the centre of the screen. If you want your animation to start, say, in the top left corner of the screen, but way back in the distance, then you will need to set the *origin* of the brush you are tweening to that position. Always set the origin *before* setting the start and end positions, as these are set relative to this point.

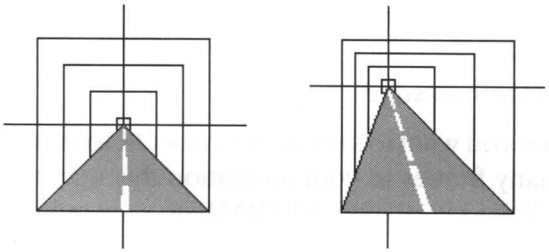


Fig 7.8: *The effect of moving the origin*

To set the origin:

- Click the cross icon (⊞) in the Tweening sub-menu and move the pointer onto the screen. Move the crosshairs that are attached to the pointer to where you would like the point of origin to be and click the left mouse button. The crosshairs will disappear and the origin is set at that point.

Animation techniques

In this section we will describe some useful animation tricks and techniques. Before you start, click CLR ANIM in the Animation sub-menu to remove the current animation. Also, make sure you are displaying frame 1 when you start creating a new animation.

Multiple animations

So far, you have been using the Tweening tool to tween a single brush in an animation, but there is nothing to stop you tweening several brushes in one animation. You can also tween a brush over a selection of frames rather than the entire animation. To do this:

- In the Tweening sub-menu enter the number of the frame at which you want the brush to start in the FRAME: edit field, and enter the number of frames over which you want the brush to be tweened in the COUNT: edit field.

A good example of where this might be used is if you want to create an animation of a flipping card. This is how it might be done:

- Load the brush named CARD.IFF in the BRUSHES directory in the TUTORIAL directory of the Art disk. Set the number of frames to 40 and the speed to 2 in the Animation sub-menu. Also, click the button labelled LOOP in order to play the animation continuously when it is complete.
- Display the Tweening sub-menu and set the count to 20 frames. Set the From X rotation to -90° and the To X rotation to 90°
- Click PREVIEW to see how your animation is coming along. You should see the outline of the card spinning along the X axis through 180° (-90° to +90°).
- If everything is OK, click TWEEN and DeluxePaint ST will draw the card on each frame at intermediate angles between -90° and +90°.
- In the Tweening sub-menu, set the Frame edit field to 20, the same number as the last frame in the animation that was just tweened.

This is done to make the animation appear to move more smoothly, as otherwise there would be a gap at the point where both the back and the front of the card were viewed edge-on (in effect, two blank frames).

- Load the brush named CARDBK.IFF in the BRUSHES directory in the TUTORIAL directory of the Art disk and, without altering any of the values, click TWEEN in the Tweening sub-menu. The back of the card will now be drawn in the same position, rotating through the same number of degrees but it will follow on from the first half of the animation which you have already created.

You can now play your animation by clicking PLAY in the Animation sub-menu or by pressing * on the keypad. You should see the card spinning smoothly from front to back.

Keyboard short-cuts

Almost all the tools and features of **DeluxePaint ST** can be accessed from the keyboard. Two features are particularly useful when creating animations:

- If you are creating an animation by hand, you will find using the keypad + and - keys helpful to move forwards and backwards by a frame, as this allows you to position the pointer exactly where you want to start the next illustration.
- Press Shift and 5 on the keyboard (not the keypad) to play an animation backwards, or Shift and 4 to play it backwards in a loop. This option is not available from any of the menus.

Refer to Appendix A to find out more about the keyboard short-cuts.

Adding frames in the middle of an animation

If you add frames to an animation, the contents of the current frame are automatically copied to the new frames. This effect can be used to introduce a delay in an animation for example, by creating a sequence

of a few identical frames. Because of the way in which **DeluxePaint ST** stores the frames of an animation, you will also find that you can add quite a number of identical frames to an animation without significantly affecting the amount of memory it uses.

Changing the brush grip

This is a very useful feature of **DeluxePaint ST** when creating animations, particularly where these involve rotations. Try this for example:

- Create 20 frames for animation
- Create a circular filled brush about half an inch across
- Stamp a copy of the brush in the middle of the screen
- Click COPY TO ALL in the Tween sub-menu to copy the brush to all of the frames in your animation
- Choose Set Grip from the Define Brush sub-menu (or press Alt Z on the keyboard) and move the pointer onto the Page. Press and hold the left mouse button and drag the pointer downwards to change the grip to a position about an inch and a half away from the brush.

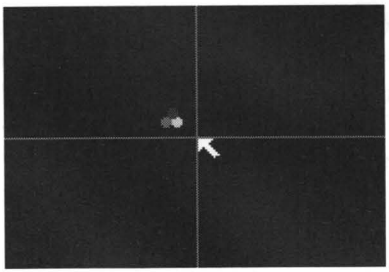


Fig 7.9: *Setting the Brush Grip*

Now your brush is offset from the cursor by about two inches. We can use it to create an animation of an orbiting planet as follows:

- Display the Tweening sub-menu and click TO.

- Move the *pointer* to the centre of the original circle and click to set the starting position. Now click the = button to set the From coordinates to be identical to the To coordinates - in this example we are not going to move the brush, only rotate it.
- Enter 360 in the To Z rotation field and click TWEEN to draw the animation.
- Now play your animation, and you will see that your planet orbits around the central circle!

Things get a bit more complicated when you try rotating the brush over more than one axis, but you might want to spend a little time trying different settings to see the effects you can create.

A disappearing act

Another use of changing the brush grip is to create an animation that starts or finishes off the edge of the Page. For example, if you wanted to tween a brush so that at the end of the animation it disappears off the right of the screen, set the brush grip a little to the left of the brush before setting the start and end positions with TO and FROM in the Tween sub-menu. It gets a little tricky if you want the animation to start off the left and end off the right of the screen. The way to do this is as follows:

- Set the brush grip to the right of the brush and set the start and end positions of the brush for the first half of the animation (eg for a 20 frame animation, set FRAME: to 1 and COUNT: to 10) using TO and FROM in the Tween sub-menu. The end position in this case should be the centre of the screen. Remember to click PREVIEW to see how the animation is going to work before clicking TWEEN to draw the frames.
- Now set the mouse grip to the left of the brush and display the last frame of the first half of the animation. Click FROM in the Tween sub-menu and move the brush so that it is exactly lined up over the top of the brush which has already been tweened, and click the mouse button. Finally, set the To position to complete the animation.

You may find that using the grid helps when aligning the brush.

Creating a scrolling background

Scrolling backgrounds can be very effective and straightforward to create. They do, however, take up a lot of memory. All you need to create a scrolling background is a picture with left and right edges that meet to form a seamless edge. Try this example:

- Create 20 frames for animation, or click CLR and then COPY TO ALL in the Animation sub-menu if you already have 20 frames ready from a previous exercise.

DeluxePaint ST allows you to load an entire picture as a brush which is a particularly useful feature for this example.

- From the Define Brush sub-menu, load the picture named BACKDROP.IFF in the BRUSHES directory in the TUTORIAL directory on the **DeluxePaint ST** Art disk and click on USE PALETTE. The complete backdrop is now attached to your pointer.
- Display the Tweening sub-menu and make sure that FRAME: is set to 1 and COUNT: is set to 20. Set the From X position to -320 and the To X position to 0. Click PREVIEW to check that the background is going to start just off the left of the page and end in the centre.
- Click TWEEN to draw the frames. Note that because the brush is so large this may take some time, so be patient!

You can play your animation so far to see how it looks. The next thing we need to do is draw the other half of the animation so that the screen is completely filled with the background:

- Display the Tweening sub-menu and make sure that FRAME: is still set to 1 and COUNT: is set to 20. Set the From X position to 0 and the To X position to 320. Click preview to check that the brush will scroll alongside the background that has already been tweened. Click TWEEN to draw the frames again.

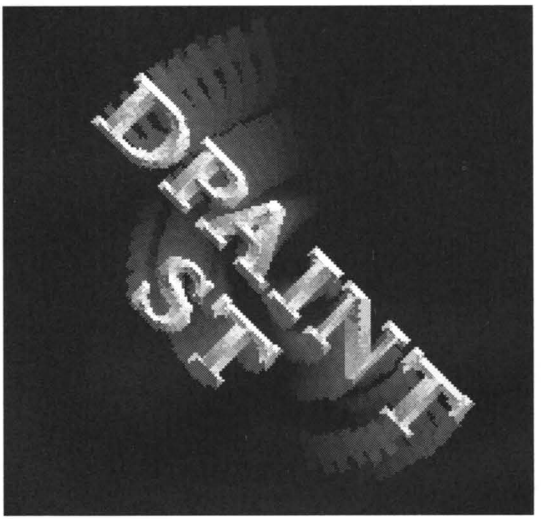
You have now tweened the same brush using two different start and end positions to create a moving background. Press 4 on the keyboard (not the keypad!) to play your animation in a loop.

Notice that the animation appears to stop momentarily on frame 1, spoiling the fluid movement of the scenery. This is because the start and end frames of the animation are identical and they are displayed twice consecutively causing a break in the movement. To remove this effect:

- Stop the animation and use the + and – keys on the keypad to go to frame 20. Display the Animation sub-menu and click DELETE to remove this frame from the animation.

Now when you play the animation the background scrolls smoothly without any interruptions. This is a technique that you will often find useful when creating looping animations.

Chapter 8



Reference

Notes

Chapter 8
Reference

This chapter contains a complete description of each of the ***DeluxePaint ST*** *tools in the order in which they they appear in the toolbox, working from left to right.*

Built-in brushes

Fig 8.1: *The built-in brushes*

There are 10 built-in brushes available in **DeluxePaint ST**. They are displayed at the top of sub-menus of tools that use or are directly affected by the brushes (the Freehand Draw tool for example). To select a brush shape from a sub-menu, click it with the left mouse button. With a built-in brush selected, pressing + or - on the keyboard will select the next or previous built-in brush. (If you are using a defined brush, + and - will increase or reduce the brush size – see Define Brush later in this chapter.) Press the '.' key on the keyboard to select the single pixel brush.

Freehand Draw tool

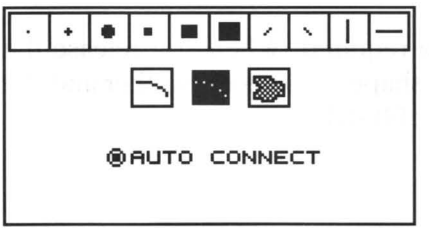


Fig 8.2: *The Freehand Draw sub-menu*

The Freehand Draw tool allows you to paint onto the page with the current brush.

To draw with the Freehand Draw tool:

- Move the pointer to the page, hold down the mouse button and move the mouse to paint.

Continuous Freehand mode (Keyboard equivalent: d)

With Continuous Freehand mode selected, no matter how quickly you move the mouse while drawing, no breaks or gaps will occur in what is being drawn. To select Continuous Freehand mode, click the leftmost of the three icons in the Freehand Draw sub-menu.

Dotted Freehand mode (Keyboard equivalent: s)

Use Dotted Freehand mode to paint quickly in a series of "splats" of the current brush. The spacing between splats increases as you paint more quickly or use a larger brush. To select Dotted Freehand mode, click the centre of the three icons in the Freehand Draw sub-menu.

Filled Freehand Shape mode (Keyboard equivalent: D)

The Filled Freehand Shape mode allows you to draw a shape which will be filled using the current fill style. Click the rightmost of the three icons in the Freehand Draw sub-menu to select Filled Freehand Shape mode. To draw a filled shape:

- Draw the outline of the shape required. When you release the mouse button, the ends of the shape are joined together and the shape is filled using the current fill style.

Auto Connect

If Auto Connect is on, then **DeluxePaint ST** will automatically switch between Continuous Freehand (connected) mode when a built in brush is chosen, and Dotted Freehand mode when a defined brush is used.

Selecting either Continuous or Dotted Freehand mode from the Freehand Draw sub-menu overrides Auto Connect until a new brush is chosen. To turn Auto Connect on or off, click the Auto Connect button in the Freehand Draw sub-menu; when it is filled, Auto Connect is on.

Straight Line tool (Keyboard equivalent: v)

The Straight Line tool allows you to draw a straight line between two points. There are three different types of lines which you can draw: single lines, connected lines, and rays. Because this tool uses the current brush shape to draw with, the built-in brushes are displayed along the top of the sub-menu so they can easily be selected.

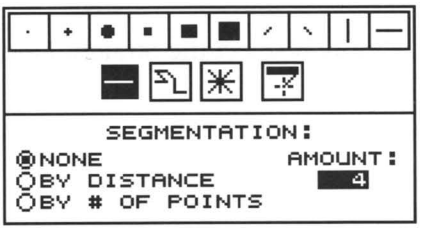


Fig 8.3: *The Straight Line sub-menu*

Single Lines mode

Use this mode to draw single straight lines. Click the leftmost of the four icons in the Straight Line sub-menu to select Single Lines mode. To draw a line:

- Place the cursor at the beginning of the line, press and hold down the mouse button and drag the mouse to produce a line of the length required. Release the mouse button to draw the line.

Note that if you are using a large brush it can take some time to re-draw the line each time you move the mouse. To cancel drawing a line that is in the wrong place, press Esc. Selecting Quick Draw (described later) will speed up line drawing.

Connected Lines mode

The Connected Lines mode allows you to draw multiple lines with the start of each line connected to the end of the previous line drawn. To select Connected Lines mode, click the second of the four icons in the Straight Line tool sub-menu. To draw Connected Lines:

- Move the mouse pointer to the place on the picture where you want the lines to start. Next, press and hold down a mouse button. Drag the mouse pointer to where you want the first line to end and release the mouse button. If you want another line to be drawn, press and hold down a mouse button, then move the mouse pointer to where you want that line to end, and release the button. Repeating this process will cause multiple connected lines to be drawn.

To start a new set of connected lines, simply reselect the Straight Line drawing tool.

Rays mode

Use this mode to draw multiple lines, each starting from the same point. Click the third of the four icons in the Straight Line sub-menu. To draw with Rays mode:

- Move the mouse pointer to the place on the picture where you want all of the lines to start. Next, press and hold a mouse button. Drag the mouse pointer to where you want the first line to end and release the mouse button. If you want another line to be drawn, press and hold down a mouse button, then drag the mouse to where you want that line to end, and release the button. Repeating this process will cause multiple lines which share the same starting point to be drawn.

To set a new starting point, simply reselect the Straight Line tool.

Quick Draw mode

When you are positioning a line using the Straight Line tool, the line may be redrawn several times. If you are using a large brush, it may take a while for each line to be drawn. Quick Draw allows you to position the line using a simple one pixel line. Once you have positioned the line and released the mouse button, the actual line will be drawn using the current brush. Click the rightmost icon in the Straight Line sub-menu to toggle Quick Draw on or off.

Segmentation

Each line drawn can be segmented (drawn by an unconnected set of points). There are two different types of segmentation: by distance and by number of points. The current type of segmentation is shown at the bottom of the Straight Line sub-menu. If the NONE button is filled, then lines will be drawn without segmentation.

Segmentation by distance

Segmenting a line by distance causes that line to be drawn by individual points drawn at a specified distance apart. For example, if the distance was equal to 3, then the line would be drawn by a set of points exactly 3 pixels apart. The distance is specified by the field labelled AMOUNT:

To select and set segmentation by distance:

- Click the button labelled BY DISTANCE in the Straight Line sub-menu. Now click on the field labelled AMOUNT: and type in the number of pixels between points. Use the cursor and delete keys as required. Press enter to confirm the setting. All lines will now be drawn segmented by the number of pixels entered.

Segmentation by number of points

Segmenting a line by number of points causes the line to be drawn using only a specified number of points. For example, if the number of points is set to 4, then the line drawn will be drawn using exactly 4 points. Each point will be spaced apart proportionally.

To select and set segmentation by number of points:

- Click the button labelled BY # OF POINTS in the Straight Line sub-menu. You can now enter the number of points in the AMOUNT: field in the same way as entering the distance described above. All lines will be drawn with the number of points entered.

Curve tool (Keyboard equivalent: q)

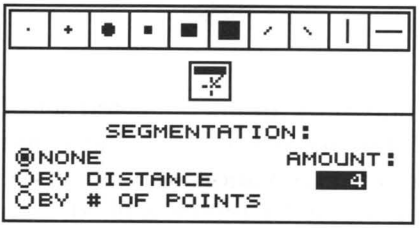


Fig 8.4: *The Curve sub-menu*

The Curve tool provides an easy method of drawing complex curves. The curve is defined by a start point, an end point and two control points. To draw a bezier curve:

- Move the mouse pointer to the place on the picture where you want the curve to start. Click and release the mouse button and the start point will appear.

Use the left mouse button to draw a curve using the current foreground colour, or the right mouse button to use the current background colour.

- Move the mouse pointer in the general direction of where you want the curve to travel. Click and release a mouse button, and a control point will appear. Move the mouse pointer farther in the general direction where you want the curve to travel. Click and release a mouse button, and a second control point will appear. Move the mouse pointer to where you want the curve to end. Click and release the mouse button. The end point will appear and the bezier curve itself will be displayed.

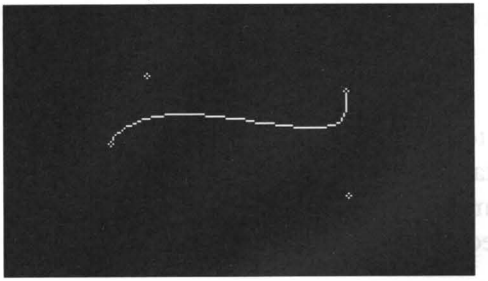


Fig 8.5: *A curve in the process of being drawn*

You can now adjust the curve before drawing it as follows:

- Press and hold the left mouse button near the point which you want to adjust. While holding down the mouse button, move the point to adjust the curve in the direction required.

Any point can be adjusted any number of times before the curve is drawn. To finish drawing the curve:

- Click the right mouse button and the curve will be drawn. Once the curve has been drawn, you can no longer edit it using the control points.

See the Straight Line tool for an explanation of the Quick Draw and Segmentation options in the Curve sub-menu.

Rectangle (Keyboard equivalent: r – unfilled; R – filled;

Control-r – to brush)

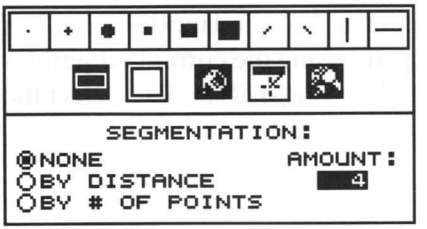


Fig 8.6: *The Rectangle sub-menu*

The Rectangle drawing tools allow you to draw both filled and unfilled rectangles or squares and provides a quick method of creating rectangular brushes. To draw a rectangle:

- Move the mouse pointer to the place on the picture where you want a corner of the rectangle to start. Press and hold down a mouse button. Drag the mouse pointer to where you want the opposite corner of the rectangle to be, and release the mouse button to draw it.

Rectangle mode

Use the Rectangle mode to draw an outlined or filled rectangle of any dimension. The Rectangle mode icon is the leftmost of the five icons in the Rectangle sub-menu. Click to select it.

Square mode

Square mode allows you to draw visually perfect squares. Because the pixels on the screen are taller than they are wide, the actual number of pixels used to draw the top and bottom of the square will be greater than the number used to draw the sides. The Square mode icon is the second from the left in the Rectangle tool sub-menu.

Filled mode

The centre icon in the Rectangle sub-menu is the Filled mode icon. Click this icon to draw a filled rectangle or square using the current fill settings (see Fill tool for an explanation of the fill settings). Type R to select the Filled rectangle mode from the keyboard.

To Brush mode

To Brush mode is used to create rectangular or square filled brushes. To Brush is the rightmost icon in the Rectangle sub-menu. To use this mode:

- Click the To Brush icon in the Rectangle sub-menu or press Control-r on the keyboard. Draw a rectangle. When you release the mouse button the rectangle becomes a brush and the Freehand Brush tool is automatically selected.

Notice that when you select To Brush mode, Fill mode is also automatically selected. You cannot create an outlined rectangular brush this way.

See the Straight Line tool for an explanation of the Quick Draw and Segmentation options in the Rectangle sub-menu.

Ellipse (Keyboard equivalent: e – unfilled; E – filled; Control-e – to brush)

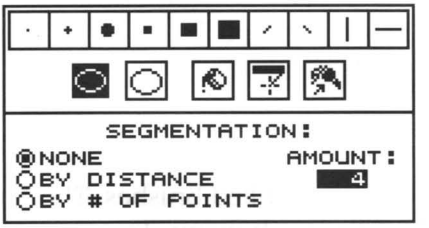


Fig 8.7: *The Ellipse sub-menu*

Use the Ellipse tool to draw filled and unfilled ellipses and circles and to create elliptical brushes. To draw an ellipse:

- Move the mouse pointer to the place on the picture where you want the centre of the ellipse. Press and hold down a mouse button. Drag the mouse pointer to create an ellipse of the size you want, and release the mouse button to draw it.

Ellipse mode

This mode allows you to draw an ellipse of any dimension. The Ellipse mode icon is the leftmost of the five icons in the Ellipse tool sub-menu. Click to select it.

Circle mode

When this option is selected it restricts the Ellipse tool to producing visually perfect circles. Click the second icon from the left in the Ellipse sub-menu to select Circle mode.

Filled mode

The Filled mode icon is in the centre of the Ellipse sub-menu. Click this icon to draw a filled ellipse or circle using the current fill settings (see Fill tool for an explanation of the fill settings). Type E to select the Filled mode from the keyboard.

To Brush mode

This mode is used to create elliptical or circular filled brushes. The To Brush icon is the rightmost icon in the Ellipse sub-menu. To create an elliptical brush:

- Click the To Brush icon in the Ellipse sub-menu or press Control-e on the keyboard. Draw an ellipse. When you release the mouse button the ellipse becomes a brush and the Freehand Brush tool is automatically selected.

Notice that when you select To Brush mode, Fill mode is also automatically selected. You cannot create an outlined elliptical brush this way.

See the Straight Line tool for an explanation of the Quick Draw and Segmentation options in the Rectangle sub-menu.

Airbrush (Keyboard equivalent: a)

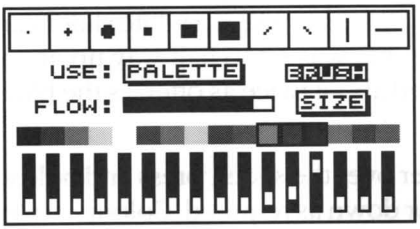


Fig 8.8: *The Airbrush sub-menu*

The Airbrush has two different modes: Brush mode and Palette mode. Both function similarly in that they randomly spray the current brush within a circular area. Press A on the keyboard to display the Airbrush sub-menu. To use the Airbrush:

- Move the mouse pointer to the place on the page which you want to airbrush, and press a mouse button. The airbrush will continuously spray the current brush until the mouse button is released.

Brush mode

In Brush mode, the airbrush will spray using the current brush and drawing modes (see the Brush Mode tool later). Click on BRUSH (use brush) to select Brush mode.

Palette mode

In the Palette mode, the Airbrush will spray using the current brush, but instead of using the brush's own colours, the brush will be sprayed using the specified colours in the palette. To select Palette mode, click on PALETTE (use Palette) in the Airbrush sub-menu.

At the bottom of the Airbrush sub-menu there is a strip of the current palette colours, and under each palette colour there is a slider bar. Each slider bar shows how much of the colour above the slider bar is desired in the Airbrush spray.

In Palette mode, the Airbrush looks at the slider bars to see how the palette colours are to be mixed. The higher the setting of a slider bar, the more likely that colour will be sprayed. For example, if a white slider bar was set to maximum, and a blue slider bar was set to half way up, then the white palette colour will be sprayed about twice as often as the blue palette colour.

To move a slider bar, move the pointer over the slider, press and hold a mouse button and drag the slider up or down as required. Colours in the palette that will be sprayed by the Airbrush are outlined in the Airbrush sub-menu palette. To select or deselect a colour for use by the Airbrush, click on the colour required. The slider position of a colour is remembered when you deselect it, so when you reselect it, its original slider setting will be restored.

Note that setting a palette slider bar to minimum will prevent the associated colour from being sprayed, as if it was turned off.

Flow

When you press a mouse button with the Airbrush tool selected, the Airbrush sprays continually at its current flow rate. A maximum flow rate means that the Airbrush sprays as fast as it can. A reduced flow rate means that the Airbrush will wait awhile between each spray. To adjust the flow rate, drag the flow rate slider (labelled FLOW:) left or right as required.

Nozzle size

The Airbrush randomly sprays the current brush within a circular area, which can be adjusted in size. To adjust the nozzle:

- Click SIZE in the Airbrush sub-menu. Move the pointer onto the page. Notice that the pointer now has the word SIZE attached to it. Press and hold down the left mouse button and drag the pointer until a circle of the desired size has been drawn. Release the mouse button to fix it.

Fill (Keyboard equivalent: f)

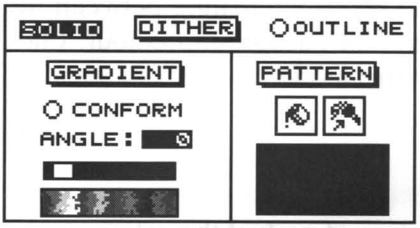


Fig 8.9: *The Fill sub-menu*

The Fill tool fills outward from a single pixel, replacing surrounding pixels of the same colour with the current fill pattern. The fill stops replacing pixels in a certain direction when it hits a pixel in that direction which is not the same colour as the starting pixel. The fill stops when it has become completely surrounded by colours different from the starting pixel's colour. Press F on the keyboard to display the Fill sub-menu. To fill an area:

- When you select the Fill tool and move the pointer onto the page, the pointer changes to a can with paint being poured out. At the tip of the paint being poured is a single pixel. Move the pointer so that this pixel is within the area that you want filled, then press and release a mouse button.

Note that if you have turned the grid on, the fill pixel will snap to the grid positions as you move the pointer.

There are four different types of fill: Solid, Dither, Gradient, and Pattern.

Solid fill mode

This mode fills using either the current foreground colour or background colour (depending on which mouse button you press). To select Solid fill from the Fill sub-menu, click SOLID.

Dither fill mode

The Dither fill mode fills an area with pixels alternating between the current foreground colour and the current background colour. Click DITHER in the Fill sub-menu to select this mode.

Gradient fill mode

Gradient fill mode fills an area with stripes of each of the colours in the current colour cycle range. The transition between one stripe and the next is blurred or *dithered* by an amount set by the dither slider bar. The angle at which the stripes will be drawn is shown in the numerical field labelled ANGLE:

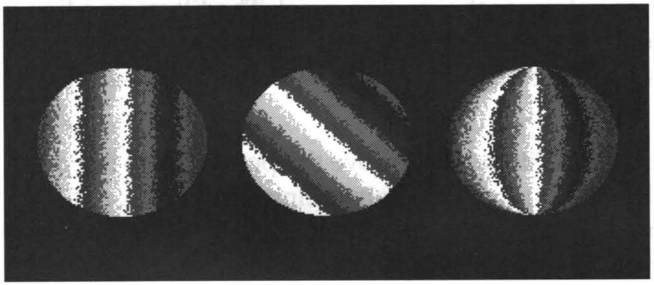


Fig 8.10: *Gradient, angled gradient and conform filled circles*

Refer to the Palette tool to find out how to create colour cycle ranges.

Conform

The Conform option causes the Gradient fill mode to follow the shape of the object being filled. For example, if a circle is filled, then the stripes will conform to the shape of the circle, causing the circle to appear three dimensional. Note that Conform follows the vertical contours of the shape being filled, and will not therefore work correctly if the gradient angle is set to anything except 0 or 180 degrees.

Click on the button labelled CONFORM to select this option, click again to deselect it. Conform is selected when the button is filled.

Angle

The angle at which the stripes are drawn when using Gradient fill mode is determined by the value in the numeric field labelled ANGLE: This can be any angle between 0 and 359 degrees. For example, the stripes will be vertical with a setting of 0 degrees, and horizontal with a setting of 90 degrees. A setting of 180 degrees will result in the stripes being drawn vertically in the opposite order to the way they appear in the current cycle range. Another way to reverse the gradient fill is to change the cycle direction – see the Palette tool to find out how to do this.

To enter a new angle, click with the left mouse button on the numerical field labelled ANGLE: A cursor will appear. Type in the new amount using the cursor keys as needed, and press Return on the keyboard or Enter on the keypad.

Pattern fill mode

Pattern fill mode fills with the pattern shown in the box at the lower right corner of the Fill sub-menu. **DeluxePaint ST** generates the pattern from the current defined brush by painting copies of the brush next to each other. Note that the spacing between copies of the brush is determined by the amount of space that was picked up around the brush when it was created, including the background colour. To select Pattern fill click on PATTERN in the Fill sub-menu.

Click the New Pattern icon in the Fill sub-menu to create a new fill pattern from the current brush.

You can remove the current fill pattern and make it the current brush - click the To Brush icon to do this. This is a handy way to temporarily store a brush.

Outline fill mode

Instead of filling the entire area to be filled, Outline mode causes only the very boundary of the area to be filled. Outline mode works with all of the fill patterns. Select Outline by clicking the button labelled OUTLINE. The button is filled when Outline is selected.

A Text (Keyboard equivalent: t)

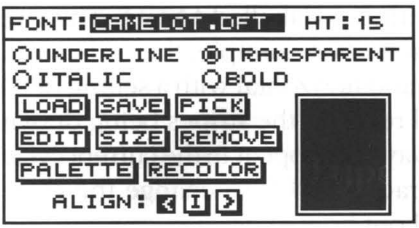


Fig 8.11: *The Text sub-menu*

The Text tool is used to type text onto the picture. **DeluxePaint ST** supports multi-colour and monochrome, proportional fonts. To use the text drawing tool, you must first load a font (described below). To type text onto your picture using the current font:

- Move the mouse to the position on the Page where you would like the text to start. Notice that the mouse pointer is displayed as a flashing text cursor. Press a mouse button (left for foreground colour, right for background colour). The mouse pointer will disappear, and you can begin typing. Type the text that you want on the picture, using the backspace key and the Return key as needed. When you have finished typing, press a mouse button to get back the mouse pointer.

Load

To type any text, there must be a font in memory. Fonts are loaded into memory from the disk drive. You can load several fonts into memory and choose which one to use from the Text sub-menu. Load a font as follows:

- Click the LOAD button in the Text sub-menu. The Text sub-menu is replaced by the File selector menu. If you have not already inserted a disk that contains **DeluxePaint ST** fonts, insert one now and click the *.DFT button.

- Double-click on the directory which contains the fonts, if this is not already being displayed (on the **DeluxePaint ST** program disk this directory is called DIR FONTS). Finally, double-click on the name of the font that you want to load.

The name and height (in pixels) of the currently selected font are displayed at the top of the Text sub-menu and an example of what the font looks like is shown in the box at the lower right corner of the sub-menu.

Save

Fonts can be edited or created using the Edit option described later. To save a font after editing, insert a disk with space to save the font on and proceed as follows:

Click SAVE in the Text sub-menu to display the Save file requester. If you do not want to overwrite the font file displayed, click on the SELECTION: text field, and type the new name for the font using the cursor keys as required, and press Return to finish. Don't forget to type .DFT at the end of the filename so that **DeluxePaint ST** will recognise the font when you come to load it again. If you want to save the font in a different directory from the one displayed, click PARENT and then click the directory name desired. Finally, click OK to save the font.

Pick

You can have up to 32 fonts in memory at any one time. To select which font you want to use, click PICK in the Text sub-menu and then double-click the font name from the list that appears.

Text styles

Text can be typed in any combination of bold, italic, underline and transparent. Click the button(s) required to select the type style you want. Selected style buttons are shown filled. Clicking a button a second time deselects it.

Each character in a font is defined as a rectangular piece of graphics. The transparent option, if selected, prevents the background colour of each character typed from being drawn. If the transparent option is deselected, then the background colour of each character will be drawn. Note, though, that this only works when using the font's own colours. Click RECOLOR to reset the font to its own colours.

Recolor (Keyboard equivalent: T)

When you type, your text will be drawn using either the current foreground colour or the font's own colours. The Recolor option is used to specify that you want the text to be drawn in the font's own colours and not the current foreground colour. Click RECOLOR or press T on the keyboard (which will also select the Text tool if it is not already selected) to recolour the current font.

Palette

Every font has its own palette information. The palette that you will be using will probably be different from the palette that the font was drawn with. This can be a problem if the colouring of the font is important to the appearance of the font. The Palette option gives you two choices to correct this problem: change the current palette so that it matches the font's palette, or remap (redraw) the font using the current palette colours.

Note that remapping the font is a permanent change to the existing font. If you do not like the way the font was remapped, then you will need to remove the font from memory and reload it again. Also, if you save the font then it will be saved in its remapped state.

To use the Palette option:

- Click PALETTE in the Text sub-menu. The Text sub-menu is replaced by the Font palette sub-menu.

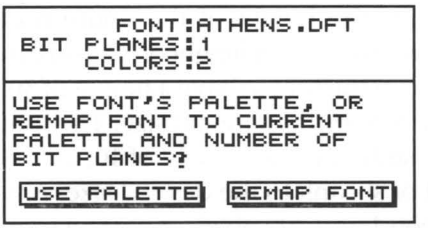


Fig 8.12: *The Font palette sub-menu*

The top of the Font palette sub-menu shows the name of the current font, the number of bit planes used to create the font, and the number of colours used to create the font. At the bottom of the sub-menu there are two options: use palette and remap font.

Clicking USE PALETTE will cause the current picture's palette to be replaced by the font's palette. Also, the Font palette sub-menu will be replaced by the Palette sub-menu so that the change to the picture's palette can be undone.

Clicking REMAP FONT will cause the current font to be redrawn using the picture's palette colours and number of bit planes.

Remove

Once a font has been loaded, it will stay in memory until it is removed using the Remove option. Clicking REMOVE will cause the current font to be removed from memory. After using the Remove option, if you wish to use that font again, then it must be reloaded (explained above). Also, after using the Remove option, you will not be able to type any text until a new font has either been picked, loaded, or created.

Size

The height of the font is the height in pixels from the highest point of the tallest character in the font (the ascent height) to the lowest point in the lowest character in the font (the descent height). The height of the current font is shown in the upper right corner of the Text sub-menu (labelled HT:).

The size option allows you to change the height of the entire font proportionally. For example, if the current font has a height of 10, you can specify with the size option that you want the font to have a height of 30. Now, when you type, the font will be 3 times the original size. The font itself has not changed. The font really still only has a height of 10, but, as you type, each character is stretched or shrunk to the desired size. Any font can be sized to any height between 1 and 200 pixels. To size a font:

- Click SIZE in the Text sub-menu to display the Font size sub-menu.

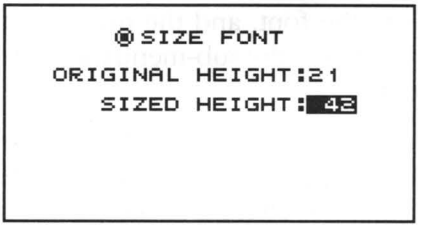


Fig 8.13: *The Font size sub-menu*

Click the numeric field labelled SIZED HEIGHT and enter the new height required. Use the cursor keys as needed and press the Return key to finish. At the top of the Font size sub-menu there is a button labelled SIZE FONT. Click this button to select it (when SIZE FONT is not selected, fonts are drawn at their original size regardless of the value entered in the Sized Height field).

Align

Text can be left, centre or right aligned. When left aligned, each new character typed appears to the right of the last character. Centred alignment causes the word or sentence to be adjusted while you type so that the original cursor position is always at its centre. When text is typed right aligned, the word or sentence is shifted to the left each time a character is typed so that the rightmost letter is always typed at the same point as the original cursor position. Align text as follows:

- At the bottom of the Text sub-menu, there are three buttons labelled ALIGN:. The first of the three buttons is the left alignment button [<], the next button is the centre alignment button [I], and the third button is the right alignment button [>]. Click on the alignment button required to align any text subsequently typed.

Edit (Keyboard equivalent: Insert)

The Edit menu contains the options that allow you to edit an existing font or create a new one.

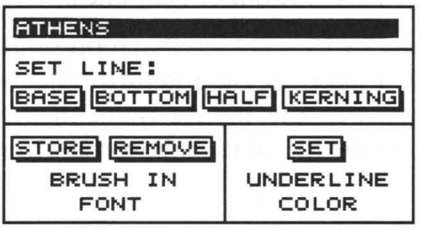


Fig 8.14: *The Text edit sub-menu*

Font description

Each font has a 24 character description, which is used to describe the font. For example, a 6x6 system font may have a filename of "font6x6.dft" and a description of "6x6 system font". The description is more explanatory than the filename.

- Click EDIT in the Font sub-menu. This displays the font edit sub-menu. Click the text field at the top of the sub-menu. Type a description of the current font, using the editing keys as needed. Press Return to finish typing.

Set Line

There are five lines which represent the dimensions of a font, two of which are calculated automatically:

The **Ascent line** which indicates the height of the tallest character (eg the letter l)

The **Descent line** indicating the lowest point of the character with the lowest descender (eg the lowercase y).

The other three lines are set by the author of the font and can be adjusted as required:

The **Base line**, which is the line upon which the characters sit (although letters with descenders such as the lower case y will extend below this line, and characters such as the apostrophe will be placed above it). This is always shown dotted in **DeluxePaint ST**. You cannot actually adjust the Base line with respect to the other lines, but you can move it up or down, for example to position the lines over some characters you have drawn or typed, to make it easier to edit the Bottom or Half lines.

The **Bottom line**, which is the line below the Descent line that represents the gap between one line and the next after pressing Return. This is defined as the minimum distance between the lowest point of the character with the lowest descender and the top of the tallest character on the next line.

The **Half line**, which is used to aid the kerning of characters (explained below). The half line is usually set to be equal to the top of the lower case letters. Note, however, that as the half line is only needed for kerning, un-kerned fonts won't necessarily have a half line set.

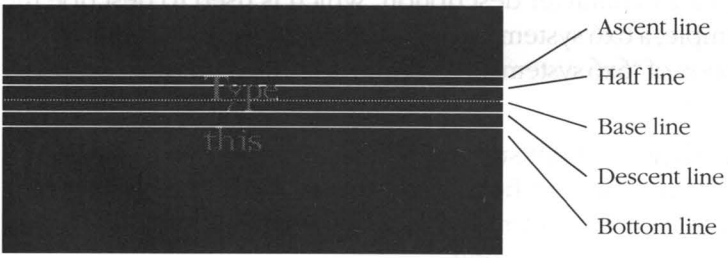


Fig 8.15: *The text dimension lines*

- To set the Base, Bottom or Half lines of a character, click EDIT in the Text sub-menu and then click BASE, BOTTOM or HALF in the sub-menu that follows. Move the pointer onto the page to display the font lines.

If you are editing the Base line, moving the pointer up and down will move all the lines together. If you are editing the Bottom or Half lines, they will move independently of the other lines.

- Move the line(s) you are editing to the position required and click the mouse button.

Kerning

Characters in a font consist simply of a series of rectangular brushes which are normally butted up against one another when typed. Kerning is a sophisticated technique for improving the spacing between characters by allowing them to effectively overlap one another. For example, in the word 'Type' the bar at the top of the capital T overlaps the lower case y.

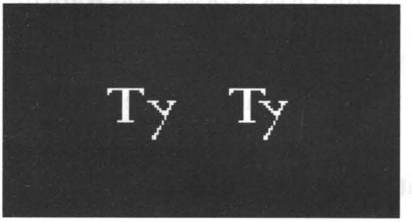


Fig 8.16: *Example of unkerned and kerned text*

The Kerning option in **DeluxePaint ST** allows you to define the spacing between characters at three points to the left and right of each character: between the Ascent line and the Half line, between the Half line and the Base line, and between the Base line and the Descent line.

To set kerning points for a character:

- Click EDIT in the Text sub-menu and click KERNING from the sub-menu that follows to display the Kerning sub-menu:

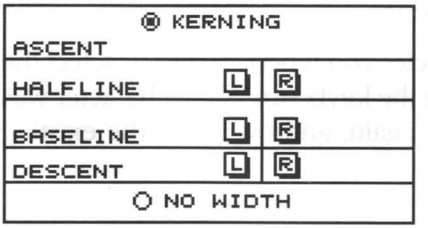


Fig 8.17: *The Kerning sub-menu*

- Type the character to kern (remembering to press the shift key for upper case letters). Another sub-menu appears from which you can choose the kerning point to edit by clicking the L (left) or R (right) button between the desired lines indicated on the sub-menu. For example, click L between the Ascent and Descent lines to set the kerning point to the left of the character between these lines. Now move the pointer onto the Page.

The character you are kerning is displayed, along with the indication lines associated with the font and a vertical kerning adjustment line. If they are not in a convenient position on the Page, scroll the page up or down or adjust the position of the Base line (see earlier).

- Move the kerning adjustment line to the closest point you want the next character (if you are setting a right point) or previous character (if you are setting a left point) to be drawn between the indication lines chosen and press the left mouse button to set the point.

For a more detailed explanation of kerning and other text-related operations see Chapter 6: Working with text.

Store

Characters are created by being drawn on the screen and then cut as a brush using the Define Brush tool (described later). Store is used to add the current brush as a character to the font being edited. To store a character:

- Click EDIT in the Text sub-menu and click STORE in the sub-menu that follows. Type the character you wish to store the current brush as and move the pointer onto the page. Move the character to the position required (usually sitting on the Base line which is shown dotted) and click the mouse button.

The brush is now stored as the character you typed. To test it, select the Text tool and type the character from the keyboard. If the character was not how you wanted it, you can try again, and overwrite the existing character.

Remove

Use Remove to delete a character from the current font:

- Click EDIT in the Text sub-menu. Click REMOVE from the sub-menu that follows and type the character to remove. The character is completely removed from the font and typing it using the Text tool will no longer have any effect.

Underline colour

The underline option (discussed earlier in this section) is used to underline text. The colour of this underline can be any of the colours used by the font. The Underline colour option is used to change the underline colour in the current font:

- Click EDIT in the Text sub-menu and click SET in the sub-menu that follows. Click the colour in the Palette that you want to set the underline colour to.

Define Brush (Keyboard equivalent: b)

Use the Define Brush tool to 'grab' a portion of your picture to use as a brush. Once grabbed, there are a number of options that allow you to modify a defined brush.

To create a brush:

- Click the Brush icon using the left mouse button and move the pointer to position the cross-hairs that have appeared so that they just touch the edges of the graphic you are going to grab. Press and hold down the left mouse button while moving the second set of cross-hairs that has appeared to enclose the graphic completely. Release the mouse button to make the current brush a copy of the graphic. Notice that the Freehand Brush tool has now been automatically selected.

If you use the right button to grab a brush, the graphic will be cut from the Page and replaced with the current background colour.

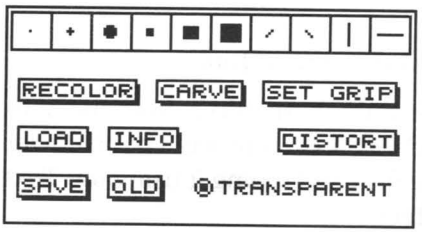


Fig 8.18: *The Define Brush sub-menu*

Recolor

When a brush is grabbed from the screen, all the colours of the graphic are grabbed with it. If you subsequently click a colour in the palette, then whatever the original colours of the brush were, they will all be replaced by the colour chosen. To reset the brush to its original colours, click RECOLOR in the Define Brush sub-menu.

Carve (Keyboard equivalent: w)

Carve provides an alternative method of grabbing a brush. Instead of using a rectangular outline it allows you to draw a freehand line around the graphic to be grabbed. This can be particularly useful where you are trying to grab a brush from an area with a lot of other graphics around it.

- Click CARVE in the Define Brush sub-menu and move the pointer to a position outside the graphic to be grabbed. Press and hold the mouse button while moving the mouse to draw an outline around the graphic. Release the mouse button to create the brush.

If you use the right button to grab a brush, the graphic will be cut from the Page and replaced with the current background colour.

Set Grip (Keyboard equivalent: Alt-z)

When drawing with a defined brush, particularly if it is a fairly small brush, you may find that the pointer crosshair partially obscures or gets in the way of the brush. Using Set Grip you can move the crosshair so that

although it still moves with the brush, it does so at a position offset from it. Also, effects such as rotating and flipping use the grip position as the axis about which they operate.

- Click SET GRIP in the Define Brush sub-menu and move the brush onto the Page. Press and hold a mouse button while moving the mouse. Notice that the brush now stays where it is when the pointer is moved. Move the pointer to the desired position and release the mouse button. You can now paint with the pointer offset from the brush.

Load

Brushes can be saved for future use and loaded again when required. Brushes are saved in the same format as pictures. To load a brush:

- Click the LOAD button in the Define Brush sub-menu. The Define Brush sub-menu is replaced by the file selector menu. If you have not already inserted a disk that contains the brush you want, insert one now and click the *.IFF button. Double-click on the directory which contains the brush if this is not already being displayed. Finally, double click on the name of the brush you want to load.

If a loaded brush has a palette that is different from the the current palette, then the Remap brush sub-menu will appear. The Remap brush sub-menu gives you two options: change the current palette to the brush's palette or remap the brush to the current palette.

- To change the current palette to the brush's palette click USE PALETTE. To remap the brush to the current palette click REMAP BRUSH.

Save

Once a brush has been created it can be saved in the same way as a picture. Options such as whether the palette is to be saved with the brush and what sort of .IFF compression should be used can be changed before saving the brush by using the Info option described next.

To save a brush:

- Click SAVE in the Define Brush sub-menu to display the Save file requester. If you do not want to overwrite the brush file displayed, click on the SELECTION: text field and type a new name for the brush using the cursor keys as required remembering to add the .IFF extension after the name (eg HOUSE.IFF), and press Return to finish.
- If you want to save the brush in a different directory to the one displayed, click PARENT and then double-click the directory name desired. Finally, click OK to save the brush.

Info

The Brush info sub-menu provides information on the dimensions of the current defined brush and, when saving the brush, whether the current palette, colour cycle information and brush mask should be included.

Fig 8.19: *Brush info sub-menu*

The brush mask is the rectangular area around the brush that is not normally seen since the background colour is transparent, but is used, for example, when creating fill patterns.

All of the options add to the amount of memory needed to save your brush, so deselect any you don't need to save your brushes most efficiently. The different methods of compression which you can select are mainly provided for compatibility with other graphics programs. If you are only going to use your brushes in **DeluxePaint ST** then you should use Vertical Word, the default setting, as it creates the smallest file size.

To set the options:

- Click the PALETTE button to save the palette information, click the CYCLE button to save colour cycling information and click MASK to save the brush mask with the brush.
- Click VERT WORD, BYTE RUN or NONE to specify the type of compression to be used when saving the brush. VERT WORD is the most efficient way to save brush files as it uses the least disk space. BYTE RUN uses the same form of compression as the Commodore Amiga and IBM PC versions of DeluxePaint, but uses slightly more disk space.

Note: When a brush is loaded the settings are automatically altered to reflect those of the new brush.

Old (Keyboard equivalent: B)

If you create a defined brush and then select a built-in brush, you can reselect the defined brush by clicking OLD in the Brush sub-menu.

Transparent

A brush is really just a rectangular area of graphics. The brush often appears non-rectangular because one of the brush's colours can be masked so that the colour is transparent (not drawn). If you want the background colour to be drawn instead of being invisible you will need to deselect the transparent mode.

- Click the button labelled TRANSPARENT in the Brush sub-menu to deselect Transparent mode. Click again to reselect it. Transparent is selected when the button is filled.

Distort (Keyboard equivalent: I)

There are a number of ways in which a brush can be modified using the Distort option. Clicking DISTORT in the Define Brush sub-menu displays the Distort sub-menu:

Fig 8.20: *The Brush Distort sub-menu*

The options available are as follows:

Flip (Keyboard equivalent: x – flip horizontal; y – flip vertical). Use this option to flip a brush about its horizontal or vertical axis. Click the button labelled HORIZ if you want to flip horizontally or VERT to flip vertically. Now click FLIP to flip the brush.

Skew (Keyboard equivalent: ' [next to the Return key]) lets you skew a brush horizontally or vertically by sliding the side or bottom of the brush. Click the button labelled HORIZ if you want to skew the brush horizontally or VERT to skew vertically, then click SKEW and move the pointer onto the Page. Press and hold a mouse button while moving the mouse to skew the edge or bottom of the brush. Release the mouse button to finish.

Undo (No keyboard equivalent) undoes the last modification carried out on the brush. Click UNDO to undo the last action.

Size (Keyboard equivalent: Z) is used to visually alter the size of the current brush. To size a brush, click SIZE and move the pointer onto the Page. Press and hold a mouse button while moving the mouse to drag the corner of the brush until it is the size you want. Release the mouse button to finish.

Halve (Keyboard equivalent: h). Click HALVE to halve the size of the brush in both the X and Y dimensions.

Double (Keyboard equivalent: H). Click DOUBLE to double the size of the brush in both the X and Y dimensions.

Rotate (Keyboard equivalent: z – 90 degrees; ; [semicolon] – Visual). Use Rotate to rotate the brush by fixed amounts or to rotate it on the Page visually.

- To rotate a brush through 90, 180 or 270 degrees click the relevant figure in the sub-menu.
- To rotate the brush visually, click SET VISUALLY and move the pointer onto the Page. Press and hold the mouse button while moving the mouse left and right to rotate the brush. While you are rotating the brush, the angle is indicated as the X coordinate. Release the mouse button when the brush is rotated to the desired angle.

Shrinking and enlarging a defined brush

In addition to the functions listed above, there are two more available only from the keyboard. You can:

Shrink or enlarge the brush proportionately by 1 pixel by pressing – or = on the keyboard respectively.

Shrink or enlarge the brush proportionately by 8 pixels by pressing _ or + on the keyboard respectively.

Fx Brush Mode tool

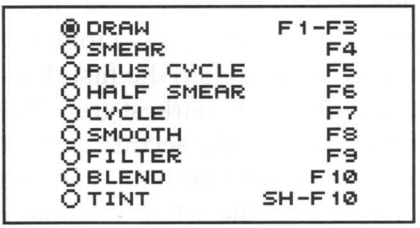


Fig 8.21: *The Brush Mode sub-menu*

There are several different painting modes which can be used with the brush. To select one of the brush modes listed below, simply click its name in the sub-menu or press its associated function key. The button next to the brush mode chosen will be filled to indicate that it has been selected.

Draw (Keyboard equivalents: F1, F2, F3)

Draw is the most commonly used mode. When using Draw mode with the left mouse button, the brush is simply drawn onto the picture. Painting with the right button will erase anything under the brush (unless it has been fixed using the Stencil tool described later). Click DRAW to select it. Press F1, F2 or F3 to select this mode. F1 additionally selects the current brush in its own colours, F2 selects the current brush in the current palette colour, F3 selects the current brush with Transparent mode off.

Smear (Keyboard equivalent: F4)

The Smear mode is used to smear colours onto other colours. When using the Smear drawing mode with the left button, the graphics under the brush are smeared in the direction the brush is moving. Painting with the right button will erase anything under the brush (unless it has been fixed using the Stencil tool, described later).

Plus Cycle (Keyboard equivalent: F5)

The Plus Cycle drawing mode replaces each colour under the brush which is in the current colour cycle range with the next consecutive colour in the colour cycle range. For example, if the current range is a spread from black to white and the picture is black then the first draw would cause the black under the brush to become the darkest grey. The next draw would cause the darkest grey to become the second darkest grey. Each further draw would cause the colours under the brush to move closer and closer to the white in the range until the white is actually reached. Painting on an area which contains no colours from the current cycle range will have no effect.

Since Plus Cycle only cycles the colours in the current range, the best results are achieved by setting the current range to a spread of colours (see the Palette tool for a description of how to create a spread of colours).

Painting with the left mouse button using the Plus Cycle mode causes each colour under the brush in the current colour cycle range to be replaced with the colour to the right of that colour in the range. Painting with the right mouse button causes each colour under the brush in the current colour cycle range to be replaced with the colour to the left of that colour in the range.

Half Smear (Keyboard equivalent: F6)

The Half Smear mode smears together the averages of the colours in the current colour cycle range. For example, if the current range in the palette is a spread from black to white and you smear from a white area to a black area then the grey scales will be smeared onto the black. Half Smear will first average the white with the black so that the centre grey in the range would be smeared. The next smear would be mainly between the centre grey and black. Half Smear will average the two colours to generate the grey half way in between the centre grey and black, and so on.

The averages are generated using the position of each colour in the current range (colours outside the current range are not smeared) so that the best results with Half Smear are achieved when the current range is a spread of colours (see the Palette tool for a description of how to create a spread of colours). Painting with the left mouse button using Half Smear mode will cause the graphics under the brush in the current colour cycle range to be half smeared. Painting with the right button will erase anything under the brush (unless it has been fixed using the Stencil tool, described later).

Cycle (Keyboard equivalent: F7)

The Cycle mode is similar to the Draw drawing mode except that the brush is drawn using the current colour cycle range colours instead of the brush's own colours. Painting with the left mouse button using Cycle mode causes the colours to be cycled from left to right. Painting with the right mouse button will cause the colours to be cycled from right to left.

Smooth (Keyboard equivalent: F8)

The Smooth mode is used to smooth (anti-alias) sharply contrasting areas of graphics. It does this by replacing colours at the borders between contrasting areas with intermediate colours according to a special algorithm. This option therefore works best where a number of intermediate colours can be found in the palette. Painting with the left mouse button using Smooth mode will cause the graphics under the brush to be anti-aliased. Painting with the right button will erase anything under the brush (unless it has been fixed using the Stencil tool, described later).

Filter (Keyboard equivalent: F9)

Filter mode is used to change the colours under the brush to a single hue while maintaining the intensity (saturation and value) of each colour.

Since the Filter drawing mode replaces the colours under the brush with colours of the same hue as the foreground colour, the filter drawing mode functions best when there is a spread of colours of the same hue in the current palette. For example, if you wanted to filter some graphics with green, you should set up a spread from dark green to light green in the palette. (See the Palette tool for a description of how to create a spread of colours.) Next, select the centre green as the foreground colour. Now, drawing on the picture will cause all colours under the brush to be replaced with shades of green.

Blend (Keyboard equivalent: F10)

The Blend mode attempts to blend the colours of the brush with the colours under the brush. The colour drawn onto the picture is the colour found in the current palette which is the closest match to the desired blend colour. For example, if a blue brush is blended onto a yellow area, then the brush will be drawn green (assuming that there is a green in the current palette). Painting with the left mouse button with the Blend mode will cause the brush to be blended with the picture. Painting with the

right button will erase anything under the brush (unless it has been fixed using the Stencil tool, described later).

Tint (Keyboard equivalent: Shift-F10)

Tint mode is used to tint the area under the brush so that it is closer to the foreground colour. The tint drawing mode searches the current palette for a colour which is similar to the colour on the picture, but is closer to the foreground colour.

For example, drawing with a red brush on a yellow area will cause the area under the brush to become light orange (assuming that there is a light orange in the current palette). Drawing on the same area again with the red brush will cause the light orange area to become reddish orange (assuming that there is a reddish orange in the current palette). Each successive drawing with the red brush will cause the area under the brush to get closer and closer to the foreground colour.

Painting with the left mouse button using Tint mode will cause the area under the brush to be tinted with the foreground colour. Painting with the right button will erase anything under the brush (unless it has been fixed using the Stencil tool, described later).

Undo (Keyboard equivalent: Undo or u)

Undo is used to undo the last graphic change done to the picture. For example, if you draw a line on the picture and then select Undo, the picture will be restored to how it looked like before the line was drawn. Selecting Undo again will reverse the undo so that the line will appear again on the picture. Note that the undo only undoes the last graphic change, so that if you were to draw two lines on the picture and then select Undo, only the second line would be removed from the picture.

Magnify (Keyboard equivalent: M)

The lower left portion of the screen is the Zoom Monitor. The magnifier allows you to view enlarged portions of the canvas or picture. You can also edit your picture directly in the Zoom Monitor. Click the Magnify tool with the right mouse button to display the Magnify sub-menu.

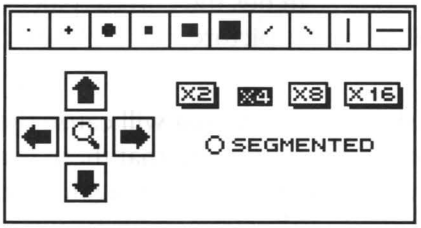


Fig 8.22: *The Magnify sub-menu*

Press Return to display or hide the Zoom Monitor

Positioning the magnifier (Keyboard equivalent: m)

Click the magnify icon in the Magnify sub-menu. The mouse pointer becomes a magnifying glass. Move the magnifier to the area of your picture you want to magnify and click the mouse button. Move the pointer over the Zoom Monitor and the area you chose will be displayed for editing.

Scrolling the Zoom Monitor

The arrow icons (surrounding the magnifying glass in the sub-menu) allow you to scroll the magnified portion up, down or sideways by moving the mouse pointer onto the desired arrow and pressing the mouse button. You can also use the keyboard arrows to scroll the view providing the pointer is positioned over the Zoom Monitor.

Magnification level (Keyboard equivalent: < – zoom out; > – zoom in)

To the right of the Magnify icon on the sub-menu are four buttons which allow you to choose the magnification level: x2, x4, x8, and x16. Click the mouse button on the magnification level desired.

Segmentation (Keyboard equivalent: ~ [tilde])

Segmentation displays the magnified view in the Zoom Monitor with each pixel separated for better clarity. Click the button labelled SEGMENTED to toggle segmentation on or off. Note: This option does not work at x2 magnification.

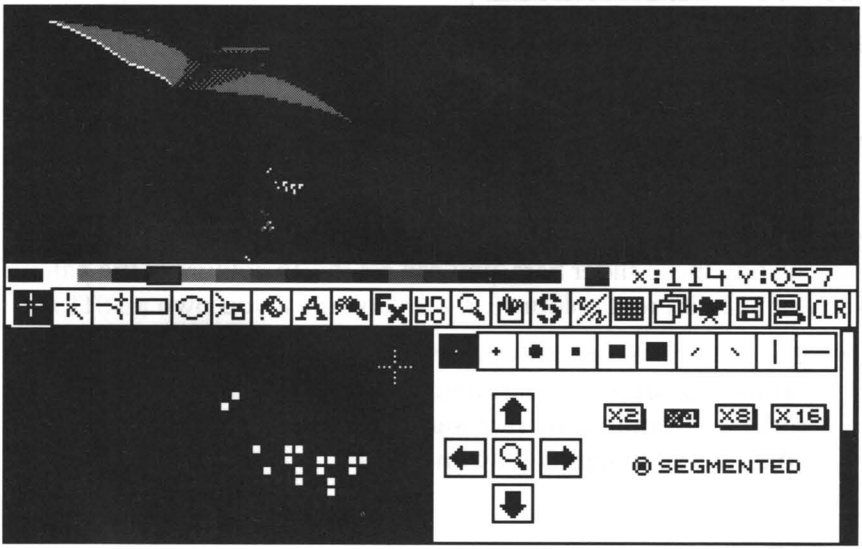


Fig 8.23: *The Segmented magnify option*

Palette tool (Keyboard equivalent: p)

The Palette tool allows you to select colours, change existing colours, create colours, and create simple animations (using the colour cycle). Clicking the Palette tool with the left mouse button will start colour cycling. Click again to stop cycling. Click the Palette tool with the right mouse button to display the Palette sub-menu.

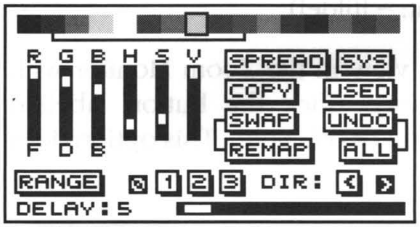


Fig 8.24: *The Palette sub-menu*

The colour slider bars

On the Palette sub-menu there are six slider bars labelled "R" (red),"G" (green), "B" (blue), "H" (hue), "S" (saturation), and "V" (value). By manipulating these slider bars, you can set the 16 colours in the palette to any of 512 different colours (or 4096 colours if you own an STE).

- To edit a colour first click the colour to edit using the colour palette on the Palette sub-menu and then adjust the R,G,B,H,S and V sliders as required by moving the pointer over the appropriate adjuster and dragging it up and down.

The RGB sliders

Move these sliders up and down to set the amount of red, green and blue in the selected colour. Setting all three sliders to the same values will result in a shade of grey. Setting any two sliders to the same values with the third slider set at maximum will produce a brightness (or saturation) of the colour controlled by the third slider.

The HSV sliders

Hue, saturation and value is really just another way of describing a colour.

Hue represents the actual colour chosen, eg red, orange or purple.

Saturation represents the amount of white in the colour. As the saturation of a colour is reduced it gradually gets less distinct until it finally becomes just a shade of grey, the actual shade depending on the setting of the Value slider.

Value represents the amount of black in the colour. As the value is reduced the red, green and blue components of the colour are reduced, but the proportions of each are maintained so that the colour itself is not altered. When the value reaches minimum all three colours are set to zero and the colour becomes black.

Spread

Use the Spread option to create a spread of intermediate colours between your chosen start and end colours. For example, if you choose purple and grey, Spread would generate all of the tones in between purple and grey. To create a spread:

- Click the desired start colour in the palette on the Palette sub-menu. Next, click SPREAD and then click the end colour desired. The computer will now generate a series of shades between the two colours specified.

Note that the number of colours between your start and end colours determines the number of shades which will be generated. If there are no colours in between, then no shades will be generated.

Copy

Copy allows you to copy a colour in the palette to another position, overwriting whatever colour was there before.

To copy a colour:

- Click on the colour that you wish to copy and then click COPY. Now click the mouse pointer on the colour that you wish to copy over.

Swap

Swap allows you to exchange the location of one colour with another in the palette. Note that this option will change the appearance of your picture if it uses either of the colours being swapped. If you want to swap colours without affecting your picture, use the Remap option described below.

To swap colours:

- Click the first colour and click SWAP. Now click the second colour to exchange it with the first.

Remap

If you have already been painting, and you swap colours in the palette, you may drastically alter your picture. Remap allows you to swap colours without visually altering the picture, by remapping the picture to take account of the change in position of the colours being swapped.

To remap colours:

- Click the first colour and click REMAP. Click the second colour to exchange it with the first and remap the picture so that it remains unaltered.

System palette

The System palette is the palette set when you first start **DeluxePaint ST**. Click SYS to replace the current palette with the System palette.

Used

Used turns all of the currently unused colours to black. This is useful for determining which colours can be changed and used without affecting those in the picture. Click USED to select this option.

Undo

Undo in the Palette sub-menu undoes the latest change to the colour palette. Note, however, that undo will not undo a remap. Click UNDO to undo the last change.

All

All (undo all) undoes all colour changes back to the point when you last selected the colour palette sub-menu. This is handy when you want to experiment with multiple palette changes and still revert to your original palette.

Range

This option is used to define a range of colours to be used for gradient fills and colour cycling. Any colour in a picture which is part of a cycle range will cycle continuously through each of the colours in the range when the Tab key is pressed. Up to four independent cycle ranges can be defined.

To the right of the range button there are four buttons: 0, 1, 2, and 3. These are the four different cycles available; you can run any combination of the four cycles at the same time.

To set a cycle range:

- Choose a colour cycle to use (0 through 3) by clicking the appropriate button. Click the desired start colour of the range and click RANGE. Click the end colour to define the range.

Cycle direction

- Set the direction in which the colours will be cycled by clicking on one of the buttons labelled DIR: (◁ cycles left, ▷ cycles right).

Cycle speed

- Set the cycle speed by moving the pointer over the adjuster on the Delay slider and dragging it to the left or right. The figure to the right of the word DELAY represents the delay between each cycle. A setting of 50 (60 in the US) represents about one second.

Note: A setting of 0 represents no cycling, 1 is the fastest speed and 180 is the slowest.

To activate colour cycling:

- Click the Palette icon on the main menu with the left mouse button, or press the tab key. Selecting the Palette icon or the tab key again will turn off the cycles.

Stencil tool (Keyboard equivalent: ' [apostrophe])

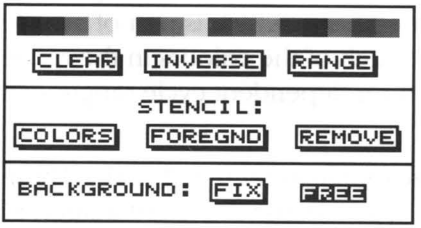


Fig 8.25: *The Stencil sub-menu*

The Stencil tool allows you to fix part or all of a picture so that it will not be altered when you draw over it. Another option in the Stencil menu allows you to fix the background so that it can be drawn over, but erasing areas of the picture will only clear changes made after the background was fixed, revealing the original picture unaffected underneath.

Stencilling colours

At the top of the Stencil sub-menu is a copy of the palette from which colours can be chosen to stencil. When a colour is stencilled, it can neither be painted over nor erased.

To stencil a colour:

- Click the colours to stencil in the palette on the Stencil sub-menu. The selected colours are highlighted. Deselect a colour by clicking it again. Finally, click COLORS to stencil the selected colours.

When selecting colours to stencil, there are three further options to help you:

Clear

Click CLEAR to clear all the selected colours.

Inverse

Click INVERSE to deselect all the selected colours and select all the deselected colours. This causes all the stencilled colours to be un-stencilled and all the un-stencilled colours to be stencilled.

Range

When RANGE is clicked, all the colours in the current cycle range are selected. If you need to stencil most of the colours, you may find it quicker to select them all this way and just deselect the colours you don't want stencilled.

Stencilling a foreground

Use this option to stencil all the foreground colours so that only the current background colour (or the fixed background if it has been set – see below) can be painted on. By setting the background to the colour

required, a single colour in an intricate pattern can be changed this way by overpainting with a broad brush using the new colour. Click FOREGND to select this option.

Removing a stencil

A stencil takes up 8K of memory regardless of whether it is on or off, so you may want to remove the stencil when memory is getting short. To remove a stencil completely from memory, click REMOVE in the Stencil sub-menu.

Fixing the background

When you fixed the background, you are telling the computer that your picture is now a clear screen. In other words, you can fix a picture as a background, then alter it as you like, and if you clear the screen (or erase using the right mouse button) you will erase back to your original picture. This is useful when experimenting, since you can always erase back to your original picture rather than starting over. Note that fixing the background requires around 46K of memory. To fix the background, click FIX in the Stencil sub-menu. Click FREE to unfix the background.

Mirror tool (Keyboard equivalent: /)

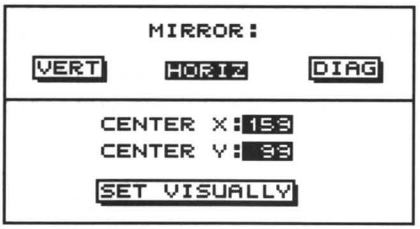


Fig 8.26: *The Mirror sub-menu*

Mirror causes the computer to create a mirror image of anything you draw, vertically, horizontally or both. This is handy when your drawing requires symmetry. The options are as follows:

Vertical

Click VERT to set mirroring to vertical so that drawing operations carried out in the top half of the Page are reflected in the bottom half (and vice-versa).

Horizontal

Click HORIZ to set mirroring to horizontal so that drawing operations carried out on the left of the Page are reflected on the right of the Page (and vice-versa).

Diagonal

This option causes drawing operations carried out in one corner of the Page to be reflected in the opposite corner. For example, drawing in the top left of the Page would be reflected in the bottom right. Click DIAG to select this option.

Center X and Center Y

Mirror creates a reflection of whatever you draw at an equal distance from a single point, called the point of symmetry. This point can be altered by typing in new coordinates or setting it visually. To change the coordinates:

- Click on the text field labelled CENTER X: or CENTER Y: depending on which coordinate you wish to change. Type in the desired coordinate using the cursor keys as needed and press Return.

Set visually

To set the point of symmetry visually:

- Click SET VISUALLY in the Mirror sub-menu and move the pointer onto the Page. Move the crosshair to the point about which you want the reflection to take place and click the mouse button to fix it.

Note: The following features are not affected by Mirror:

Filled rectangle
Filled ellipse
Smear
Half smear
Fill

Grid tool (Keyboard equivalent: g)

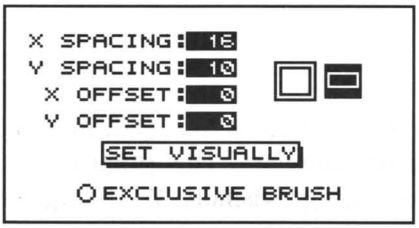


Fig 8.27: *The Grid sub-menu*

The Grid tool allows you to limit where you can draw to intersections of a grid. The grid spacing can be set to any X and Y values and can be offset from the top left of the screen. Click the Grid icon to turn the grid on or off.

X and Y spacing

X and Y represent the horizontal and vertical distance between grid points. To set the X and Y spacing:

- Click the numeric field labelled X SPACING or Y SPACING to alter the X or Y spacing respectively. Type in the new value using the cursor keys as needed, and press Return.

X and Y offsets

The X and Y offsets allow you to choose where the grid will start relative to the upper left-hand corner of the screen. The X offset is the distance from the left of the screen. The Y offset is the distance from the top of the screen.

- Click the numeric field labelled X OFFSET or Y OFFSET to alter the X or Y offset respectively. Type in the new value using the cursor keys as needed, and press Return.

Set Visually (Keyboard equivalent: G)

You can also set the grid visually using the Set Visually option. This is done as follows:

Click on SET VISUALLY and move the pointer onto the Page. Notice that a sample grid has appeared. Position the upper left hand corner of the sample grid where you want the grid to start. Now press and hold the left mouse button, and move the mouse until the grid is the desired size. Release the mouse button.

Keep square

You can limit the grid to be only perfectly square (not rectangular). Note that with this mode typed-in values will also be squared. For example, if you type in an X spacing of 16, the Y spacing will automatically square itself to 14 (16 x 14 results in a visually perfect square on the Atari ST monitor). Click the leftmost of the two icons on the Grid sub-menu to select Keep square; click the rightmost icon to deselect it.

Exclusive Brush

When you pick up a brush with the Grid on and Exclusive Brush selected, a one pixel border on the bottom and right edges is excluded. This is useful if you need to create a pattern (using PATTERN in the Fill sub-menu) with a brush which has a outline around it. It is also useful for programmers who need to create and move graphics on byte (8 bit) boundaries, as when a brush is picked up using an 8x8 grid without Exclusive Brush mode selected, the brush will actually be 9 pixels wide by 9 pixels high. Click the button labelled EXCLUSIVE BRUSH to select it.

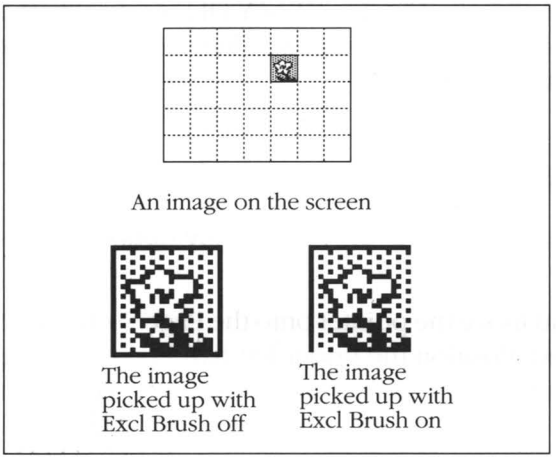


Fig 8.28: *Using the Exclusive Brush mode*

Tweening (Keyboard equivalent: / on keypad)

The Tweening function is an aid to animation which allows you to instruct the computer to paste the current brush onto a series of frames while rotating, shrinking or enlarging it to create an animation sequence. All you have to do is define the start and end positions of the brush and the number of frames over which it is to be tweened, and the computer will calculate all the frames that will appear in between.

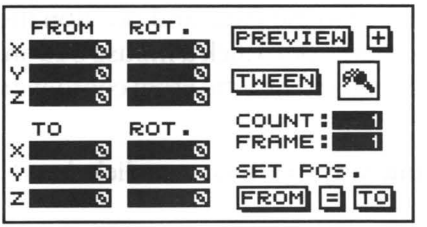


Fig 8.29: *The Tweening sub-menu*

Before you can tween a brush, you will need to add the number of frames required for the operation. See Chapter 7: Animation for details of how to do this.

The coordinates

There are X,Y and Z coordinates and X,Y and Z rotations for the start and end positions of the brush to be tweened. The X and Y coordinates represent the position of the brush on the Page; the Z coordinate represents the distance from which the brush is viewed (the greater the distance, the smaller the brush will appear). X and Y rotations cause the brush to 'flip' over along the X or Y axis (a 180 degree flip will result in the brush being displayed in reverse). Z rotation is used to rotate the brush clockwise by the angle entered.

To enter a coordinate, click on the desired edit field, type in the new value using the cursor keys as needed, and press Return.

Set Position

The Set Position options provide a visual method of entering the X and Y coordinates of the brush which is easier and quicker than typing the coordinates by hand.

To set the FROM X and Y coordinates using Set Position:

- With a defined brush selected, click on the Tweening icon to display the Tweening sub-menu.

- Click on FROM, move the pointer onto the Page and position the brush where you would like it to start from. Click a mouse button. The coordinates are automatically entered into the From coordinate fields.
- Set the To coordinates in the same way, but this time click the TO button.

Note that you will still need to enter the Z coordinates and rotation angles if these are required.

Notice also that between the FROM and TO buttons in the sub-menu there is another button labelled =. Clicking this button will set all the From coordinate fields (not the rotation fields) to the same values as the To fields. This can be useful if you only want one or two coordinates to change between them.

Setting the origin (Keyboard equivalent: . [decimal point] on the keypad)

At the top-right of the Tweening sub-menu is the origin button ⊞. This button is used to set the XY origin for tweening. This is particularly useful when an animated brush starts from or ends at a corner of the screen some way in the backround (ie with a large Z coordinate). The further away a brush is positioned, the closer it gets to the point of origin for a given XY coordinate. By moving the point of origin to where the brush will be at its greatest distance you can minimise this effect.

- Click ⊞ and move the pointer to the position to where you want the origin. Click a mouse button to set the origin.

Frame and Count

These edit fields contain the number of the frame from which the tweening is to start (FRAME), and the number of frames to be used for tweening (COUNT). The more frames you use for tweening, the smoother the animation will be as the changes between one frame and the next will be smaller.

Note that if you attempt to tween beyond the last frame in your animation, the tweening will wrap round to the start again. This is particularly useful if you want to overlap animation sequences in continuous animations. You can create some interesting effects by tweening over more frames than there are in the animation. To enter the Count or Frame number:

Click on the field labelled FRAME to enter the starting frame number, or click on COUNT to set the number of frames to tween. Type in the new value using the cursor keys as needed, and press Return.

Preview

Once you have entered the tweening coordinates you can preview the animation that will result by clicking PREVIEW. This will result in a wire frame outline set to the same size as your brush being moved and rotated along the path you defined.

Tween

Click TWEEN to generate each frame containing the start, end and intermediate images of the brush according to the settings in the Tweening sub-menu. Note that it is not possible to undo tweening, so you should first click PREVIEW to check that the brush is following the path and rotating in the way you want it to.

Tween brush

On the right of the sub-menu is a brush icon. By selecting this you can tween the brush without drawing on the page. This is useful if you wish to distort your brush three-dimensionally. Enter the required values of rotation and size in the TO fields of the Tweening sub-menu and click the brush icon. Note that you cannot undo a tweened brush, so if you are not sure if the brush will turn out as you want it, paste a copy of the original in a spare buffer or save the brush before tweening it.

Animation tool (Keyboard equivalent: 3 on the keyboard)

Animation works on the same principle as the old flip books by creating an animation frame by frame, a frame being, in this case, a picture. Basically, an animation is just a series of pictures which are displayed rapidly one after the other, like motion picture film. Any changes between the pictures appear as animation. Click the Animation icon to display the Animation sub-menu.

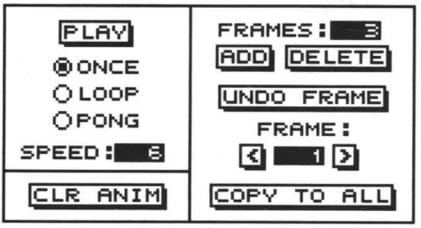


Fig 8.30: *The Animation sub-menu*

Play (Keyboard equivalent: * on the keypad)

Click PLAY to play the current animation. There are three options for playing an animation, as follows:

- Click the button labelled ONCE or press 5 on the keyboard to play the animation once from beginning to end.
- Click the button labelled LOOP or press 4 on the keyboard to play the animation from beginning to end continuously. Press a mouse button to stop the animation.
- Click the button labelled PONG or press 6 on the keyboard to play the animation from beginning to end, then from the end back to the beginning before starting over again continuously. Press a mouse button to stop the animation.

Speed

The number in the field labelled SPEED: represents the amount of time each frame is displayed for when the animation is played. The greater the number, the slower the animation. Click on the edit field labelled SPEED, type the number desired using the cursor keys as needed and press Return.

Creating frames

To create an animation, you first need to decide how many frames you are going to use. To enter the number of frames required, click on the edit field labelled FRAMES:, type the number desired using the cursor keys as needed and press Return.

Add and Delete

You can add or delete individual frames by clicking on ADD or DELETE as required. Adding a frame inserts a copy of the current frame between it and the next frame. Note that you cannot recover a deleted frame using Undo.

Undo frame

Any changes that have been made to the current frame since it was displayed can be undone by clicking UNDO FRAME. If DeluxePaint ST runs out of memory and won't let you leave the current frame, click UNDO FRAME to release sufficient memory to allow you to do this.

Displaying frames (Keyboard equivalent: - [minus sign on keypad] – back 1 frame; + [plus sign on keypad] – forward 1 frame)

You can enter the frame to display in the edit field labelled FRAME: or step forwards or backwards by one frame by clicking the appropriate button to the left and right of the edit field. To enter the number of the

frame to display, click on the edit field labelled FRAME:, type the frame number using the cursor keys as needed and press Return.

Clear Animation

You can clear the entire animation by clicking CLR ANIM. When you do this, a message is displayed asking you if you are sure you want to delete the entire animation. Click DELETE to clear it.

Copy to all

Copy to all copies the current picture to all frames of the animation. This is useful when you need the same background in each frame. Click COPY TO ALL to copy the picture on the displayed frame to all other frames.

Disk tool

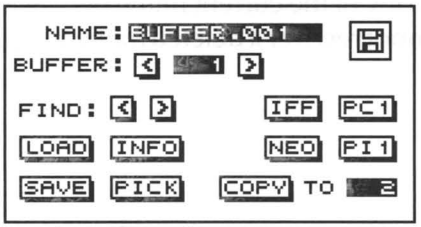


Fig 8.31: *The Disk sub-menu*

Clicking the Disk tool will display the Disk sub-menu. All disk operations, with the exception of loading and saving defined brushes, are carried out from this sub-menu. The options are as follows:

Name

The filename of the currently displayed picture is indicated in the edit field labelled NAME:

Buffer

A buffer is an area of memory which can contain a single picture or all the frames of a single animation. You can load or create several pictures or animations at one time (depending on how much free memory is available), each of which is stored in a buffer.

The BUFFER option is used to view and create new buffers to store pictures or animations in. The number of the buffer currently displayed is shown in the Buffer edit field. Clicking the button to the right of the edit field will either display the picture in the next buffer, or if there are no more buffers, it will create a new one. Clicking the button to the left of the field will display the picture in the previous buffer if there is one. You can also enter the number of the buffer you want to display directly. To do this:

- Click on the edit field labelled BUFFER:, type the buffer number using the cursor keys as needed and press Return. Note that if you type a buffer number that does not exist, a new buffer will be created.

Find

This option is used to flip through the buffers to find the picture you want to edit. This option only displays buffers with pictures in, so if for some reason you had pictures only in buffers 1, 6 and 9, this would be a much quicker way of finding them than using the Buffer option. Click on the left button to view the previous buffer, and on the right button to view the next buffer.

IFF, NEO, PC1, PI1

These buttons are used to select the file format of the current picture when you come to save it. The file format that DeluxePaint uses as standard is IFF; the other formats are provided for compatibility with other graphics packages, such as Neochrome and Degas Elite.

To use this option, click the button indicating the file format required. **DeluxePaint ST** will automatically add the correct file extension to the name.

Load

Clicking LOAD will display the Load Picture requester:

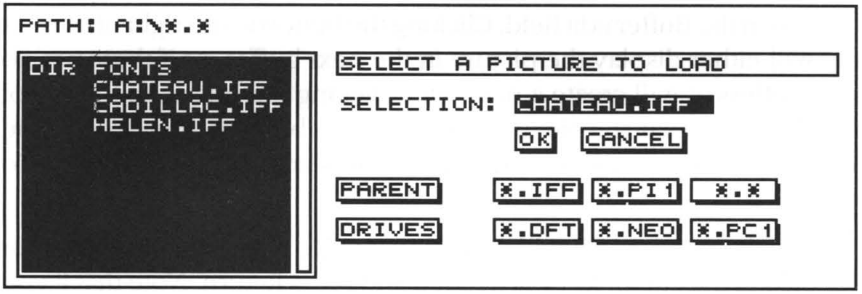


Fig 8.32: *The Load Picture requester*

This contains the following features:

Path

The current drive and directory path is displayed in the top left hand corner of the requester.

Directory window

The contents of the currently logged disk are displayed at the left of the Load Picture requester. Directory names are displayed with the word DIR printed in front of them. Disk drives are indicated by the word DIR followed by the disk name (eg DIR A:) To display the contents of a directory, simply double-click on its name.

Parent

Click PARENT to display the parent directory of the currently displayed files.

Drives

Click DRIVES to display the list of disk drives available on your computer.

Selection

The edit field labelled SELECTION: displays the currently selected filename.

OK

Click this button to load the file displayed in the selection edit field.

Cancel

Click this button to return to the Disk sub-menu without loading a file.

*.IFF, *.PI1, *.*, *.DFT, *.NEO, *.PC1

These buttons are used to indicate which files to display in the directory window. For example, if you click *.IFF then only files with the extension .IFF will be displayed. Click *.* to display all files. Directories are always displayed whichever button is clicked.

Save

Clicking SAVE displays the Save Picture requester. This is exactly the same as the Load Picture requester described above. Enter the new name for the picture into the selection edit field by clicking on it, typing the filename using the cursor keys as needed and pressing Return. Click OK to save the picture.

Info

This button allows you to view and set various options specifying what information will be saved with the picture in the current buffer.

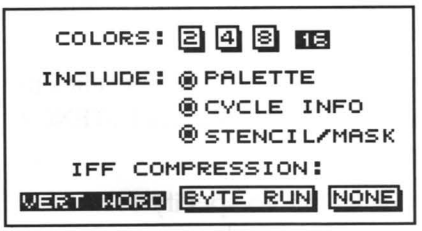


Fig 8.33: *The Disk Info sub-menu*

These options affect the way in which the picture in the current buffer will be saved. The settings are also saved with the picture, so they will be automatically set when the picture is next loaded.

Colors

You can change the number of colours used by a picture. This is particularly useful when creating a font, as many fonts only use two colours and you can reduce the amount of memory they use considerably by setting your palette to two colours before saving the font. To use this option:

- Click the appropriate button for the number of colours you wish to use. If you click a smaller number of colours than are available in the current palette, you will be asked if you are sure you wish to continue. Click CONTINUE and the current palette will be displayed from which you will need to select the colours to drop (**DeluxePaint ST** makes an intelligent guess as to which colours to drop). Selected colours are highlighted. To select or deselect a colour, click on it. Click REMAP when you have chosen which colours to drop.

Palette, cycle, stencil and compression

You can choose whether the current palette, colour cycle information, stencil and mask should be included when the picture is saved. All of these options add to the amount of memory needed to save your picture, so deselect any you don't need to save your pictures most efficiently.

The different methods of compression which you can select are mainly provided for compatibility with other graphics programs. The exception to this is when you are loading and saving large animations. In this case you may find that choosing no compression or byte run compression will reduce the time taken to save the picture.

- Click the PALETTE button to save the palette information, click the CYCLE button to save colour cycling information and click STENCIL/MASK to save the stencil information.
- Click VERT WORD, BYTE RUN or NONE to specify the type of compression to be used when saving the brush.

Byte run is the compression type used by the Commodore Amiga and IBM PC versions of DeluxePaint, so a picture saved in this format and transferred to an Amiga or IBM format disk can be loaded on either of these machines.

Note that animations will need to be converted using the CONVERT.PRG utility supplied with **DeluxePaint ST** if you wish to play them on the Amiga in DeluxePaint III (see the reference card for details on this utility).

Pick

Pick is yet another way of selecting which buffer to view. Click PICK to display the Select Buffer requester. Double click on the name of the picture to display.

Disk Operations

To the right of the Disk sub-menu there is an icon of a disk. Click this icon to display the Disk Operations screen. This screen contain most of the disk housekeeping functions that you would normally find on the ST desktop.

Path

The current drive and directory path for each directory window is displayed in the top left-hand corner of the screen.

Directory windows

Two directory windows are displayed on the Disk Operations screen allowing you to view the contents of two disk drives or two different directories on the same disk drive.

Between the two windows are the options which allow you to log different drives, change directories and display selected filetypes. These options are the same as those displayed in the Load Picture requester described earlier. The options apply to the currently selected directory window. To select a directory window, click anywhere on it. The box around the options becomes 'attached' to the selected directory window.

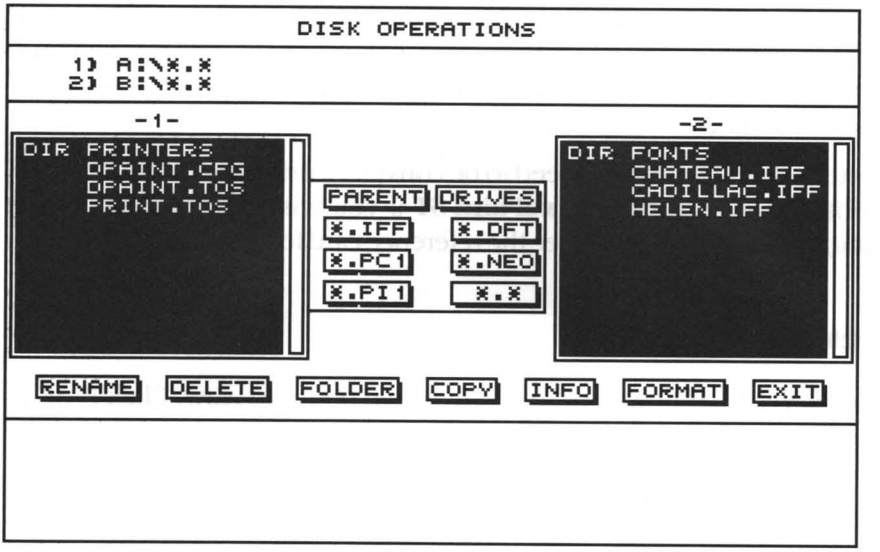


Fig 8.34: *The Disk operations sub-menu*

Selecting multiple files

Some of the options in the Disk Options screen allow you to work on several files at the same time. To select several files, hold the shift key down and click each filename required. Alternatively, hold the mouse button down while selecting the first file and move the mouse up or down to select the remaining files.

Rename

Use Rename to change the filename of a picture. You cannot rename a directory. Click the file to rename and click RENAME. Click the NAME: edit field and enter the filename using the cursor keys as needed.

Delete

Delete all selected files using the Delete option. You can also delete a folder this way. Note that deleting a folder also deletes the files within it. To delete the selected files, click DELETE. The number of selected folders and files are displayed at the bottom of the screen along with another DELETE option. Click DELETE at the bottom of the screen to erase the files completely from your disk.

Folder

Use this option to create a new folder. Click FOLDER, click the NAME: edit field and enter the new folder name. If there is sufficient room on the disk, a new folder will be created.

Copy

You can copy one or more files or folders from one disk drive to another or one directory to another using Copy. The selected files will be copied to the currently logged disk and directory in the opposite directory window. To copy the selected files, click COPY. The number of selected folders and files are displayed at the bottom of the screen along with another COPY option. Click COPY at the bottom of the screen to copy the files.

Note that you cannot copy files from one disk to another this way if you only have one disk drive. To do this from within **DeluxePaint ST**, simply load the pictures to copy into separate buffers, swap the disks and save each of the buffers onto the new disk.

Info

This allows you to check the size of one or more files, folders or check the space remaining on a disk drive. This is an extremely useful option as it allows you, for example, to select a group of files and check if they are going to fit on the disk you want to copy them to before actually starting the copy operation.

Format

You can format a blank disk, either single sided or double sided (if you have a double sided disk drive) using this option. Select the disk drive to format, insert the blank disk and click FORMAT. Click the button labelled SINGLE-SIDED or DOUBLE-SIDED as required and click FORMAT to erase the disk. If a message is displayed which says "Error - unable to complete operation", check that you have inserted the correct disk and that the write protect tab is not set. NOTE THAT THIS WILL ERASE EVERYTHING THAT WAS ON THE DISK so you should check carefully to make sure there is nothing you want to keep on the disk. Also, to avoid a catastrophe, always work with a copy of your **DeluxePaint ST** disk, and set the write protect tab to be doubly sure.

Exit

Click EXIT to return to the Disk sub-menu.

About DeluxePaint ST

Fig 8.35: *The About sub-menu*

The About sub-menu contains the DeluxePaint version number and copyright notice. The following options are also included here:

Number of colours

If you are using an Atari STE computer, you will be able to click the first of the three buttons in the middle of the sub-menu to choose between 512 and 4096 colours. This is the range of colours from which your 16 colour palette is made up. The 512 colour mode is included to provide compatibility with all other Atari ST computers.

More

Click this button to display the names of some of the many people who spent a lot of time, effort and fun bringing **DeluxePaint ST** to you.

Quit

Click QUIT to leave **DeluxePaint ST** and return to the Desktop. Don't forget to save any drawings which you may have worked on first, remembering to check through each of the buffers.

Save configuration

On the **DeluxePaint ST** program disk there is a configuration file called DPAINT.CFG. This file contains the default settings which are loaded whenever you run **DeluxePaint ST**, and saved when you click SAVE CONFIG in the About sub-menu. It contains the following settings:

- Current palette colours
- Colour cycle info (range, speed and direction for each of the four ranges)
- Current foreground colour
- Current background colour
- Number of colours (512/4096 - Atari STE only)
- Animation speed
- Picture INFO settings (colours, palette, cycle, stencil, compression)
- Brush INFO settings (colours, palette, cycle, stencil, compression)
- Magnification settings (x2,4,8,16, segmentation on/off)
- Auto connect setting
- Animation play mode (once, loop, pong)
- Currently loaded fonts (automatically loaded when you start **DeluxePaint ST**)

Note that the disk containing the fonts which are set to be automatically loaded must be in the same disk drive and path from which they were originally loaded. This means that the fonts must be on your copy of the program disk unless you have a second drive. If **DeluxePaint ST** cannot find the fonts, it will finish loading without them.

CLR Clear

This is used to clear the screen and remove unwanted buffers from memory. To remove a buffer, display it, remove the stencil and fixed backround if these have been set, and click CLR. As soon as you display a different buffer, the old buffer will be removed from memory.

Notes

Appendix A

The Printing Utility

Notes

Appendix A
The Printing Utility

An introduction to colour printing

Traditional printing uses a different set of primary colours from those displayed on the screen. These are cyan (equal amounts of green and blue), yellow (red and green) and magenta (blue and red). The reason these colours are used is because ink *reflects* light while the pixels on your screen *produce* light. The white light from the sun or a lamp is made up of a whole spectrum of colours. Cyan ink appears cyan because it absorbs all the red light in the spectrum while reflecting the blue and green colours, magenta ink absorbs green light and reflects blue and red, and yellow ink absorbs blue and reflects red and green. If you mix cyan and yellow inks together, both the red and the blue light is absorbed and only the green light is reflected, hence cyan and yellow equals green. Mix cyan, yellow and magenta together and you get black as all the colours are absorbed (although in practice printers usually use black ink to get a really good black).

Desktop colour printers can be split into two categories: non-impact and impact printers.

Non-impact printers

These printers use ink-jets or thermal transfer mechanisms to apply colour to the page. You can generally expect better results from a non-impact printer, but at a price.

Impact printers

As the name suggests, these printers use printing 'heads' which contain a number of pins which are forced against the page. Between the pins

and the page is a ribbon which contains the ink used to print with. Colour impact printers are generally not very good at printing a wide range of colours, so it is worth spending a little time experimenting to see which colours come out best.

With both types of printer, primary and secondary colours work the best (Pure cyan, yellow, magenta, red, green, and blue).

Printing monochrome images

You can print colour images on a black and white printer, in which case all the colours will be converted to shades of grey using the selected halftone method. Ideally, though, if you are creating a picture especially for the printer, you should create your image using a spread of grey shades. Because the shades are created by the Print utility from 4X4 groups of pixels, a total of sixteen grey shades (including black and white) can be printed.

The printing utility

Pictures created with DeluxePaint ST can be printed on a wide variety of printers. Since this utility uses several files when printing, some precautions should be observed. The printer drivers use pattern files to produce the best possible output. These files, ending in ".PAT", must be in the same directory as the printer driver, ending in ".DPD". If a colour printer is used, a Colour Correction File must be loaded (See "LOAD CCT" later in this section). If you wish to use the default colours, the file DEFAULT.CCT should be in the same directory as the PRINT.TOS program.

Loading a picture

The LOAD PIC button allows you to load an IFF picture to the screen. This is the picture that will be printed when PRINT is selected.

- Click on the LOAD PIC button to display the Load Picture file selector and double click the picture you wish to load.

Loading a printer driver

Before you can print your picture you first need to load a printer driver that will work with your printer. The printer drivers provided with DeluxePaint ST are listed at the end of this appendix.

To load a printer driver:

- Click on the DRIVER: LOAD button on the Main Menu. A file selector will appear showing all of the files with a .DPD extension in the current directory. Select the printer driver which best matches the capabilities of your printer.

If you do not know which printer driver to use, see the printer compatibility chart. If your printer is not listed, but it works with most other Atari ST software try the EPSONX.DPD driver. This is the most common printer driver. If none of the provided printer drivers will work correctly with your printer, check the settings and DIP switches on your printer.

The printer drivers use pattern files which define how the ORDERED and HALFTONE shades are produced at different resolutions. These files, with .PAT extensions, must be in the same directory as the printer driver being loaded. If you want to copy your printer drivers onto a separate disk, be sure to copy all the .PAT files as well.

Colour Correction Tables

The CCT (Colour Correction Table) file is a file which tells the program how to print any of the colours available on the ST. Since all monitors are not alike, and all printers are not alike, the DeluxePaint ST Printing Utility allows you to adjust this table so that you can more closely match the printer colours with those displayed on your screen. Colour Correction Tables can be loaded and saved by clicking on the LOAD or SAVE buttons respectively and must be loaded before attempting to adjust colours via the Colour Adjustment menu. To call up the Colour correction table LOAD/SAVE buttons, simply select the COLOR Button under the RESOLUTION: field This option is only available for colour printing.

To load a CCT, click on the LOAD button under the COLOR and B&W switches. A file selector will appear. Select the file with a .CCT extension which you wish to load. Only one CCT file (DEFAULT.CCT) is included with DeluxePaint ST.

You can change the settings in the Colour Correction Table from the Colour Adjustment menu described next. To save the current table click on the SAVE button under the COLOR and B&W switches. A file selector will appear. Enter the new name of the CCT you are saving and click on OK.

The Colour Adjustment menu

This menu contains the options that define how the colours and shades in your picture will be printed. You can save these settings in a Colour Correction Table (CCT) as described earlier. Click COLOR to display the Colour Adjustment menu.

Adjusting the palette

On the top of the menu (in the middle of the screen) you will see a 16 colour palette. This is the palette that the drawing was created with. In the middle of the menu there are 4 sliders. These are called the CMYK (Cyan Magenta Yellow and black) sliders. If you are using a black & white printer only the K (black) slider will be available. These sliders represent the colour the printer will produce when printing the currently selected colour in the palette.

- Click on any of the colours in the palette or on the picture to select the colour you wish to adjust. Move the slider bars up and down to adjust the quantities of each colour the printer will use to produce the selected colour in the palette.
- Click TEST to see the results of your changes on the printer.

Printing methods

On the left of the menu there are 3 choices for print methods. They are ORDERED, HALFTONE, and RANDOM. When the printer produces a shade, it is made up of dots and spaces. These options allow you to change the way a shade is produced on the printer.

The ORDERED option tries to produce the best solid shade possible. For example a 50% grey is produced by printing every other dot.

The HALFTONE option usually produces the best printout. This technique is very popular in the publishing industry. The lightest shade uses one dot in a 4 X 4 area while the darkest shade uses all 16 dots in the same area. This method will produce the best colours on a colour printer.

The RANDOM option can provide the smoothest printout in some cases. It produces a shade by randomly printing a dot. The lightest shade has a 1 in 16 chance of printing a dot. Since this method does not take into account printers which have dots that overlap, it will often print darker than the other 2 methods.

Testing the settings

The TEST button will print a 1/4 in. by 8 in. strip of the 16 colours in the palette using the print method selected.

The UNDO button will return the CMYK values of the 16 colours in the palette to what they were when you first entered the Colour Adjustment menu.

The OK button will return you to the Main menu after you have finished making whatever changes you wanted.

Changing the layout

The LAYOUT button changes the menu to the Layout menu. This menu allows you to adjust the size and orientation of the picture to be printed.

- Click LAYOUT to display the Layout menu. To enter numerical values click on the number you wish to change. Press the Esc key to clear the number that is already in the field. Press Return to enter the new number.

The first section allows you to enter the size of the paper being used in your printer. NOTE: Most printers only print 8 inches wide even if you are using 8.5 wide paper. The value entered here should be the maximum area that can be printed on a page, not the size of the actual paper. This section also shows the total number of pages needed to print the picture.

The second section allows you to enter the size of the picture to be printed. If you wish to print a poster for example, enter the poster's total width and height in inches.

The AUTO ASPECT switch is a toggle switch. When it is on, the picture will be printed with the correct aspect ratio. If you wish to print a picture with uneven scaling, this button can be turned off.

The HORIZONTAL and VERTICAL buttons are used to determine how the printout will be oriented on the page. HORIZONTAL will print the picture as you see it on the screen. VERTICAL will print the picture rotated 90 degrees anticlockwise. This will fill the entire page, producing a larger printout.

The JUSTIFICATION buttons allow you to print the picture on the left, centre, or right of a page.

The FORM FEED buttons allow you to select when the printer will form feed to the top of the next page. Poster printing is done by printing vertical "strips" of the poster. If AFTER STRIP is selected a form feed will only be sent to the printer at the end of each strip. If AFTER PAGE is selected a form feed will be sent after every page has been printed. If no form feed is desired, simply turn off both options.

Click on the OK button in the middle of the centre section to return to the Main Menu.

Setting the printer resolution

The DRAFT button will set the printer resolution to the lowest available resolution, and provides the fastest prints but also the worst quality. Use this setting to test paper alignment and the positioning of the picture on the page.

The FINAL button will set the printer to the highest resolution. Use this setting to produce your final print. Note that it can take a long time to print a picture, especially on high resolution printers such as the HP Laserjet.

The ADJUST button allows you to set the printer resolution to any resolution supported by the printer driver. With this option you can choose an intermediate resolution that will print with reasonable results without taking too long to print.

The Colour and B&W buttons

If you are using a colour printer, use these buttons to select colour or black and white printing. The COLOUR option is not, of course, available if you are using a printer which is only capable of printing in black and white.

Choosing a printer port

The Print Output options allow you to direct printing to the parallel port, serial port, or to a disk file.

To have all printing sent to the parallel port, click on the PARALLEL switch. This is the most common printer port. This port connector is sometimes called the 'printer port'.

To have all printing sent to the serial port, click on the SERIAL switch. This port, sometimes called the 'modem port', must be set to communicate with your printer before running the DeluxePaint ST Printing Utility by using the RS-232 configuration desk accessory which came with your computer. This option is part of the Control Panel desk accessory on most systems.

Click on the DISK output switch to have all printing sent to a file. The information sent to a file when you print is exactly the same as the information that would sent to a port if you were printing to a printer.

Once a file has been created, it can be printed from the desktop by double-clicking on the file (or clicking once and selecting Open...). When the GEM desktop asks whether you would like to Show or Print the file select Print and the file will start printing. This is the fastest way to print multiple printouts of the same picture since the program only has to calculate and produce the printout once. However, this method does require a LOT of disk space.

Printing your picture

To print a picture, click on the PRINT button. A printer driver must be loaded before any printing can be done. Once PRINT is selected the screen will show the full picture to be printed. As printing takes place a line showing the printing being calculated will move across the screen. If you wish to stop printing at any time, press the Esc key. Printing will stop when the program has finished calculating the current printer pass.

Saving your settings

The LOAD and SAVE buttons under the SETUP section allow you to load and save configurations of the program switches. To load a configuration:

- Click on the LOAD button in the SETUP section. A file selector will appear showing all files with a .CFG extension. Double click the configuration file required.

When a configuration is loaded, a new printer driver is loaded (with .PAT files), a new CCT file is loaded, the print method is set, the output port is set, the printer resolution is set, and the picture size, position and orientation are set.

To save the current configuration:

- Click on the SAVE button. A file selector will appear. Enter the new name of the configuration you are saving and click OK to save it.

If you name the configuration "DEFAULT.CFG" and save it in the same directory as PRINT.TOS, the configuration will be loaded automatically the next time you run PRINT.TOS.

Printer Compatibility Chart

The following printers are supported by DeluxePaint ST:

Printer	Driver
Atari SMM804	OLDEPSON.DPD
Citizen 120D	EPSONX.DPD
Citizen SWIFT 24	EPSONQ.DPD
Epson EX/FX/JX/LX/MX/RX	EPSONX.DPD
Epson FX/MX/RX etc. (Old models)	OLDEPSON.DPD
Epson LQ	EPSONQ.DPD
Hewlett-Packard DeskJet, DeskJet+, LaserJet+, LaserJet II, ThinkJet	HPPJ.DPD
IBM ProPrinter 2	IBMPRO2
NEC PinWriter P5/P6/P7/P9/P2200	EPSONQ.DPD
Okimate 20	OKI20.DPD
Panasonic 1080/1091/1180/1191 (in Epson mode)	EPSONQ.DPD
Panasonic 1080/1091/1180/1191 (in IBM mode)	IBMPRO2
Panasonic 1124/1524/1624 (in Epson mode)	EPSONX.DPD
Star Gemini 10/15	OLDEPSON.DPD
Star NB	EPSONQ.DPD
Star NC/NL/NP/NX/ND/NR (in EPSON mode)	EPSONX.DPD
Star NL/NP/NX/ND/NR (in IBM mode)	IBMPRO2

Notes

Appendix B

Keyboard Commands

Notes

Appendix B
Keyboard commands

Almost all the functions in DeluxePaint ST can be obtained by pressing the appropriate key on the keyboard; in fact, some features can only be accessed from the keyboard. This appendix contains a list of all the keyboard commands available in DeluxePaint ST.

Cursor Keys

→	Scroll zoom window left (pointer in zoom window)
←	Scroll zoom window right (pointer in zoom window)
↑	Scroll zoom window up (pointer in zoom window)
↓	Scroll zoom window down (pointer in zoom window)
↑	Scroll main window up (pointer in main window)
↓	Scroll main window down (pointer in main window)
Shift ↑	Jump to top of screen (pointer in main window)
Shift ↓	Jump to bottom of screen (pointer in main window)
Alt ←	Move cursor left
Alt →	Move cursor right
Alt ↑	Move cursor up
Alt ↓	Move cursor down
Alt Home	As right mouse button
Alt Insert	As left mouse button

Tools

a	airbrush	f	fill
b	cut brush	q	curve
c	circle	r	rectangle
C	filled circle	R	filled rectangle
d	continuous freehand	s	dotted freehand
D	filled freehand	t	text
e	ellipse	v	straight line
E	filled ellipse		

Brush operations

B	restore brush
h	halve brush
H	double brush
x	flip brush horizontally
X	double brush horizontally
y	flip brush vertically
Y	double brush vertically
z	rotate brush 90 degrees
Z	size brush
;	rotate brush any angle
'	skew brush in current setting
=	expand brush
+	expand brush by 8 (Keyboard +)
-	shrink brush (Keyboard -)
_	shrink brush by 8
.	use pen tip #1 (keyboard .)
Alt s	centre grip
Alt x	swap x corner of grip
Alt y	swap y corner of grip
Alt z	set grip
Ctrl c	filled circle to brush
Ctrl e	filled ellipse to brush
Ctrl r	filled rectangle to brush

Animation

Keyboard numbers only (not keypad).

	Unshifted:	**Shifted:**
1	Previous frame	Go to first frame
2	Next frame	Go to last frame
3	Animation sub-menu	Go to last goto
4	Play loop	Play reverse loop
5	Play once	Play reverse once
6	Play pong	No keyboard equivalent

Keypad:

(	previous buffer
)	next buffer
/	calls tweening sub-menu
*	play animation
Keypad -	previous frame (or play previous n number of frames if preceded by a 1 or 2 digit keypad number)
Keypad +	next frame (or play next n number of frames if preceded by a 1 or 2 digit keypad number)
Enter	go to frame number (preceded by 1 or 2 digit keypad number) Note: a 3 digit keypad number immediately jumps to the frame without needing to hit enter.
←	Decrease animation speed while playing
→	Increase animation speed while playing
.	set origin for tweening

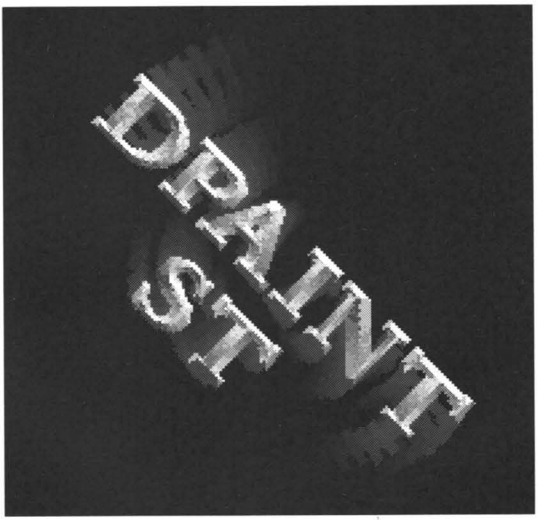
Sub-menus

Return	menus on/off
Space bar	menus & icons on/off
A	airbrush
F	fill
l	brush distortion
M	magnify
p	palette
Q	quit
3	animation
_	stencil
?	system
Help	disk menu
Shft help	disk ops
Insert	text edit

Miscellaneous

g	grid lock on/off
G	set gridlock
j	swap with last buffer
J	copy to last buffer
Clr or K	clear screen
m	set magnify
T	recolour font
Undo or u	undo last edit
Esc	cancels most functions
‘	stencil on/off
Tab	colour cycling on/off
[	use previous colour as foreground
]	use next colour as foreground
{	use previous colour as background
}	use next colour as background
delete	crosshairs on/off
~	magnify segmentation on/off
,	pick colour
<	decrease magnification
>	increase magnification
/	mirror on/off
shift	if held down, causes the mouse to lock onto the first axis in which it is moved

Appendix C



Memory Management

Notes

Appendix C
Memory Management

RAM space

There are two techniques which **DeluxePaint ST** uses to try to fit as much data as possible into the available memory space. Firstly, the software constantly packs down areas of data to ensure that there are no gaps in the memory which are not being used, and secondly, pictures in buffers which are not being displayed are stored in a compressed form so that they take up as little space as possible. As you switch from one buffer to another, the currently displayed picture is compressed and stored, and the next buffer is decompressed and displayed on the screen.

The combination of these two techniques can save a great deal of memory, and this is how **DeluxePaint ST** can allow you to hold several pictures or a number of frames of animation in memory at the same time.

If you are using an Atari ST with 2MBytes or more of RAM, you will occasionally notice a delay when performing certain operations. This is most obvious when deleting frames from an animation with most of the RAM filled. This is due to the amount of memory that **DeluxePaint ST** has to move around to fill the gaps. When frames are deleted, memory becomes very fragmented and it can take several seconds, or even minutes in extreme cases to pack down the data.

DeluxePaint ST will begin to display warnings when the available memory drops to below 30K. It does this whenever you switch to another buffer or another frame of an animation.

If you create a drawing in a new buffer when there is very little space remaining, you may find that **DeluxePaint ST** will not allow you to switch to another buffer. This is because there is no longer enough space to create the compressed version of the screen being displayed. In this case, you will need to try to recover some memory using any of the techniques described overleaf, or save the buffer to disk and then clear it to allow you to display the remaining buffers.

If you attempt to play an animation when there is not enough memory left, **DeluxePaint ST** will either stop and refuse to leave the displayed frame, or force the animation back to frame one. If this happens, check to see if you are using any other buffers, and clear any you don't need. Otherwise, delete a frame from the animation or recover some memory using any of the techniques described below.

What to do if you are running out of memory

- Remove any stencil. This will save approximately 8K of RAM.
- Free the background if it is fixed. This is one of the most memory hungry features of **DeluxePaint ST**, using up to 48K.
- Remove any unnecessary fonts. The fonts generally do not take up much memory unless they are extremely large or multi-coloured.
- Remove the fill pattern. Most people forget they even have a fill pattern, although it takes up as much room as the original brush it was made from.
- Reduce the defined brush. A defined brush is saved uncompressed in memory, so it can take up quite a bit of space. To save space, simply cut a smaller one. Note that changing to an in-built brush does not save memory.
- Save buffers to disk and free them. A buffer's allocated memory is removed from RAM by deleting all the frames within the buffer and clearing the screen. Make sure that you do not have a stencil defined: this will fool **DeluxePaint ST** into thinking that there is still something in the buffer.

Disk space

Generally, **DeluxePaint ST** is very efficient at saving files and you are unlikely to be able to reduce significantly the amount of disk space your drawings take up. Here are some tips which may help, however:

- Save your drawings using the highest compression mode available. This is the default setting for **DeluxePaint ST**.
- If you are desperate, save your drawings without colour cycling or palette information. This will mean that the drawing will use the current palette and cycle ranges when it is next loaded, and it will not be possible to recover the original palette, so unless you created the drawing with the default palette in the first place, this may not be very helpful. Also, you will only save 64 Bytes of memory!
- You can save space by cutting the picture out and saving it as a brush. Because of the efficiency of the data compression routines, however, saving a picture as a brush is unlikely to save any space unless you need to save the picture without any compression.

A Problem has Occured

If ever you get this message whilst you are using Deluxe Paint ST it means that somehow a software error has prevented you from completing the action you were trying to perform. In most cases this will only happen when you are very low on memory. DeluxePaint ST has software traps incorporated, so that it will prevent the ST from ever re-setting to desktop, allowing you to save your work before re-booting.

We would appreciate it if you could let our Customer Service department (See one number on page 12 of this manual) know of any problem of this nature so that we can advise of any work around and so that we can fix the problem for future revisions of the software.

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Credits

Programmers:
Steven White, Troy D Gillette and Anthony Pabon

Additional Design:
Theodore Pabon, Noah Stein, E Daniel Arey

Director:
Jocelyn Ellis

Producer:
John Roberts

Product and Documentation Manager:
Debbie Allan

Documentation:
Eric Willner, Alpha CRC Ltd.

Program art contributed by:
Jason Lord, Avril Harrison, Greg Johnson, Tomoya Ikeda, Dan Silva, Chris Palamino, Lori Washbon, Gene Hamm, Colin Dodson.

Product Tester:
Colin Dodson

Package Design:
Grapplegroup

Artistech Development wish to thank:
Annalue White, Celeste Robinette, Richard Anderson, Dennis Hayes, Ron Schwenk and the crew at Computertime, Greg Bahlhorn, Paul Bower, Ken Hodge and Scott Trepanitis.

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- In the United States, contact Electronic Arts, P.O. Box 7578, San Mateo, CA 94403-7578. Tel. (415) 572-ARTS
- In Australia, contact ECP/EA, 4/18 Lawrence Drive, Nerang, Gold Coast, QLD 4211. Tel. (75) 963-488

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Langley Business Centre
11-49 Station Road, Langley, Berkshire, England, SL3 8YN

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